APPENDIX L
Air Quality Conformity Assessment

AIR QUALITY CONFORMITY ASSESSMENT
PEACEFUL VALLEY RANCH RESIDENTIAL DEVELOPMENT
TM 5341RPL5, GPA 03-05, R03-015, MUP 04-048, LOG NO. 04-19-007

Submitted to:

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ISE Project #04-031

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INTRODUCTION AND DEFINITIONS

Existing Site Characterization

The project site consists of approximately 181 acres located in the town of Jamul within the unincorporated area of the County of San Diego as can be seen in Figure 1 below. The project area and surrounding community consists of mostly vacant lands and rural residential and equestrian uses. The project site is bordered by Campo Road (SR 94) to the west with onsite access via Peaceful Valley Ranch Road (currently a dirt road). SR 94 currently provides regional access to the project area.

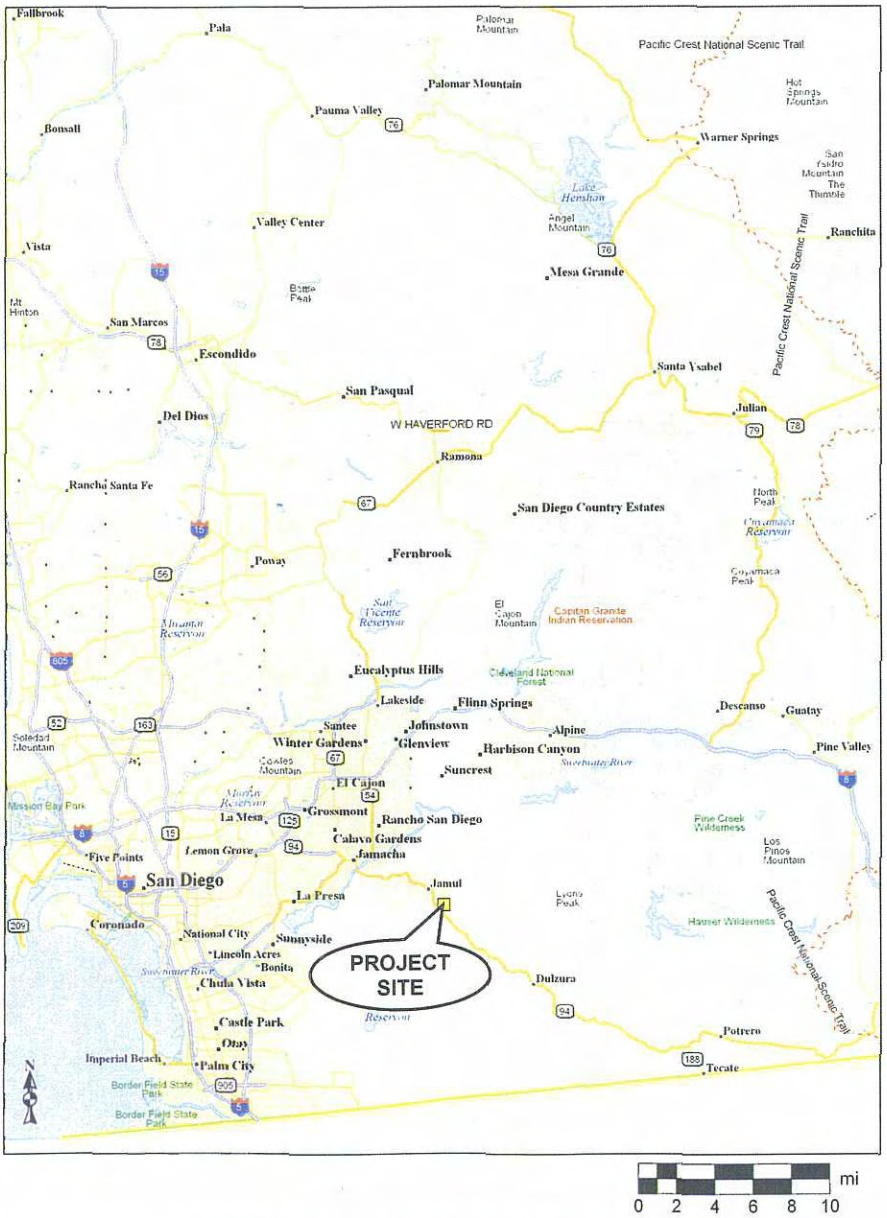

FIGURE 1: Project Vicinity Map (ISE 11/06)

The project site currently consists of mostly undeveloped agricultural land with some existing dwellings on site. The proposed project site has a zoning use regulation of A-72 (General Agricultural) with a minimum lot size of two acres on the west side and eight acres on the east side. Topographically, the project site consists of hillside terrains with elevations on the entire property ranging from approximately 828 to 1,108 feet above mean sea level (MSL) as can be seen in Figure 2 below.

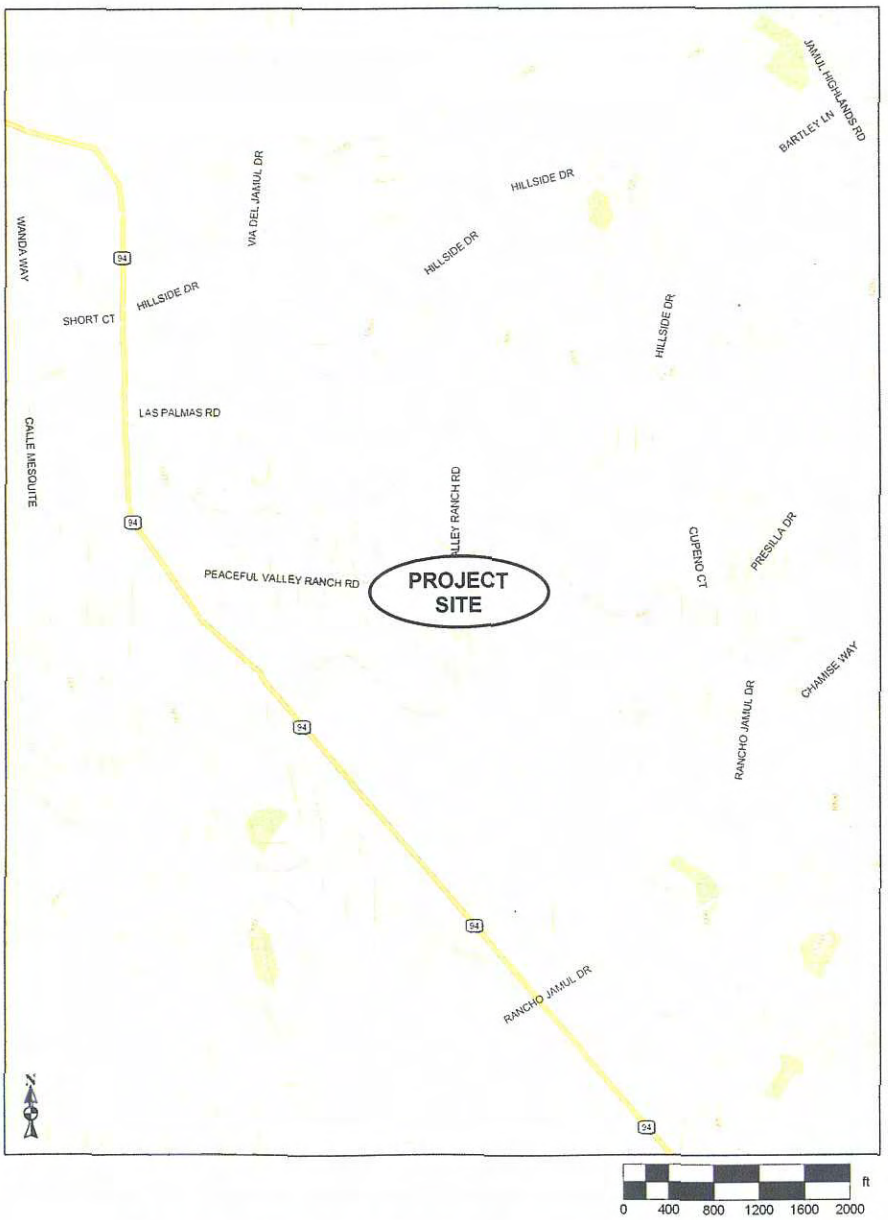

FIGURE 2: Project Site Map with Topography (ISE 11/06)

Project Description

The Peaceful Valley Ranch project proposes the subdivision of 181.31-acres for an estate residential development, equestrian uses and amenities, and fire service facilities. The development plan includes a total of 57 lots consisting of:

- One estate residential lot of 4.0-acres for the existing Ranch House (Lot 5)
- 46 new estate residential lots ranging in size from a minimum of 2-acres up to approximately 7.7-acres (Lots 1 through 4 and 6 through 47);
- One 6.7-acre equestrian facility lot (Lot 48);
- One 3.7-acre lot reserved for a new joint-use fire station and administrative offices of the San Diego Rural Fire Protection District (RFPD) and U.S. Fish and Wildlife Service (USFWS) (Lot 49);
- One 3.7-acre open space lot for the protection of biological resources (Lot 50);
- One 28.9-acre private horse stable and polo training facility (Lot 51); and,
- Six private roadway lots (Lots 52-57).

The project also includes a General Plan Amendment (GPA) and rezone to amend the existing land use designation of the easterly 152.4-acres of the 181.31-acre property from (18) Multiple Rural Use (1 du/4,8,20 ac) with an A72 (8) General Agriculture zone, to the (17) Estate Residential (1 du/2, 4 ac) designation with an A72 (2) General Agriculture zone. The General Plan Amendment covers APN's 597-050-13, 597-070-02, and 597-070-07. The GPA request also seeks removal of a segment of a County of San Diego Circulation Element Road, SC 760, a portion of which is currently aligned through the project site. SC 760 is a planned two-lane Light Collector Road. The segment of SC 760 proposed for removal with the project extends from SR 94 north to Olive Vista Drive.

In addition, Lot 49, approximately 3.7-acres, is proposed for joint use by the Rural Fire Protection District (RFPD) and the United States Fish and Wildlife Service (USFWS) as a future site for relocation of a community fire station and administrative offices. The RFPD currently leases the existing fire station, which is located across SR-94 and currently houses six full-time fire fighters. The current lease is nearing expiration. Peaceful Valley Ranch will provide a convenient site at which to relocate area fire protection services.

The public equestrian facility proposed on Lot 48 will include stables, an exercise arena, hot walker, bullpen, hay barn, manure storage area; office area (approximately 200 square feet) and restrooms, caretaker residence and parking. The private equestrian uses are proposed on Lot 51 (30.8 acres). Lot 51 will include: a regulation size polo field (turf cover), stables, exercise arena, bullpen, hot walkers, hay barn for feed storage, manure storage area, office, restrooms, caretaker residence and parking. The current site development plan is shown in Figure 3 on the following page.

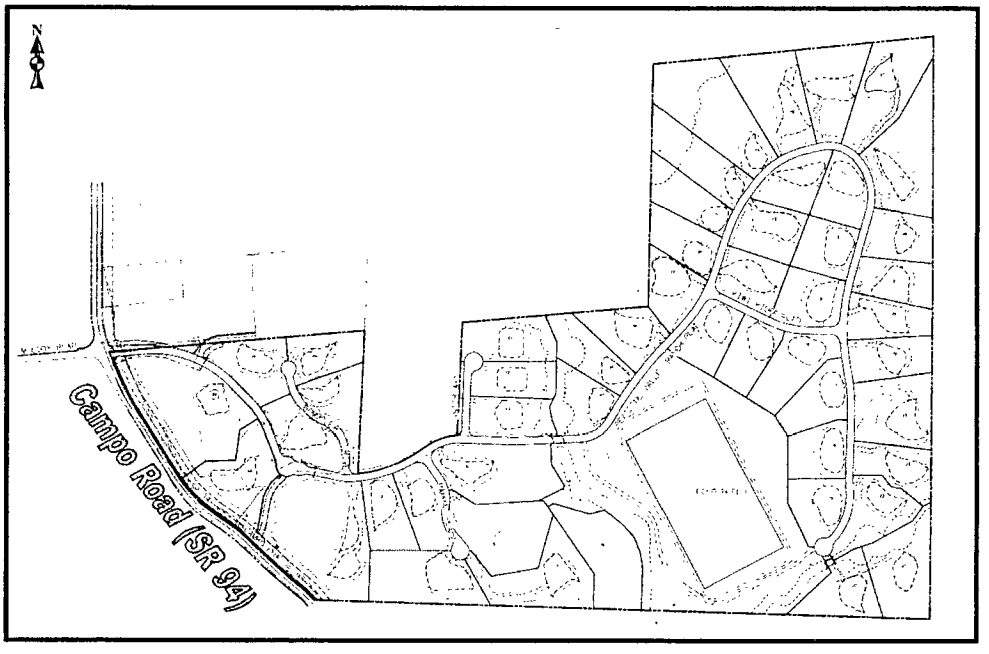

FIGURE 3: Proposed Peaceful Valley Ranch Site Plan (RBF Consultants Inc. 7/06)

Air Quality Definitions

Air quality is defined by ambient air concentrations of specific pollutants determined by the Environmental Protection Agency (EPA) to be of concern with respect to the health and welfare of the public. The subject pollutants, which are monitored by the EPA, are Carbon Monoxide (CO), Sulfur Dioxide (SO_2), Nitrogen Dioxide (NO_2), respirable 10-micron particulate matter (PM_{10}), sulfates, lead, Hydrogen Sulfide (H_2S), Volatile Organic Compounds (e.g., vinyl chloride, etc.), and visibility reducing particles.

Examples of sources and effects of these pollutants are identified below:

- Carbon Monoxide (CO): Carbon monoxide is a colorless, odorless, tasteless and toxic gas resulting from the incomplete combustion of fossil fuels. CO interferes with the blood's ability to carry oxygen to the body's tissues and results in numerous adverse health effects. CO is a criteria air pollutant.

- Oxides of Sulfur (SO_x): Typically strong smelling, colorless gases that are formed by the combustion of fossil fuels. SO_2 and other sulfur oxides contribute to the problem of acid deposition. SO_2 is a criteria pollutant.

- Nitrogen Oxides (Oxides of Nitrogen, or NO_x): Nitrogen oxides (NO_x) consist of nitric oxide (NO), nitrogen dioxide (NO_2) and nitrous oxide (N_2O) and are formed when nitrogen (N_2) combines with oxygen (O_2). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO_2 is a criteria air

pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility.

- Ozone (O_3): A strong smelling, pale blue, reactive toxic chemical gas consisting of three oxygen atoms. It is a product of the photochemical process involving the sun's energy. Ozone exists in the upper atmosphere ozone layer as well as at the earth's surface. Ozone at the earth's surface causes numerous adverse health effects and is a criteria air pollutant. It is a major component of smog.

- PM_{10} (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. PM_{10} also causes visibility reduction and is a criteria air pollutant.

- $PM_{2.5}$ (Particulate Matter less than 2.5 microns): A similar air pollutant consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO_2 release from power plants and industrial facilities and nitrates that are formed from NO_x release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions.

- Volatile Organic Compounds (VOC): Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOC's contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOC's often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

- Reactive Organic Gasses (ROG): Similar to VOC, Reactive Organic Gasses (ROG) are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight.

The EPA (under the Federal Clean Air Act of 1970, and amended in 1977) established ambient air quality standards for these pollutants. This standard is called the National Ambient Air Quality Standards (NAAQS). The California Air Resources Board (CARB) subsequently established the more stringent California Ambient Air Quality Standards (CAAQS). Both sets of standards are shown in Figure 4 on the following page. Areas in California where ambient air concentrations of pollutants are higher than the state standard are considered to be in "non-attainment" status for that pollutant. It should be noted that the new eight-hour ozone standard is expected to become effective in early 2006.

Pollutant	Averaging Time	California Standards [1]		Federal Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	0.12 ppm (235 µg/m^3)[8]	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)*		0.08 ppm (157 µg/m^3)[8]		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		50 µg/m^3		
Fine Particulate Matter (PM2.5)	24 Hour	No Separate State Standard		65 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	—	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 µg/m^3)		—		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	—	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	1 Hour	0.25 ppm (655 µg/m^3)		—	—	—
Lead[9]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	—
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[9]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

FIGURE 4: Ambient Air Quality Standards Matrix (after CARB/EPA, updated 5/6/05)

THRESHOLDS OF SIGNIFICANCE

San Diego County Air Quality Screening Standards

In the absence of formally adopted thresholds, the County of San Diego uses Appendix G.III of the State CEQA guidelines as thresholds of significance and recognizes the San Diego Air Pollution Control Districts (SDAPCD) established screening thresholds for air quality emissions (*Rules 20.1 et. seq.*) as screening standards. These standards focus on the following potential impact areas:

1) Would the proposed project conflict or obstruct the implementation of the San Diego Regional Air Quality Strategy (RAQS) or applicable portions of the State Implementation Plan (SIP)?
2) Would the Proposed Project result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation?
3) Since San Diego County is presently in non-attainment for the Federal and/or State Ambient Air Quality Standards for Ozone (O_3) and Particulate Matter Less then 10 Microns (PM_{10}), would the proposed project result in a cumulatively considerable net increase of PM_{10} or exceed quantitative thresholds for O_3 precursor, oxides of nitrogen (NO_x) and Volatile Organic Compounds (VOCs)?
4) Would the proposed project expose sensitive receptors (schools, hospitals, resident care facilities, or day-care centers) to substantial pollutant concentrations?
5) Would the proposed project create objectionable odors affecting a substantial number of people?

These screening standards will be applied throughout this air quality conformity assessment for the basis of determination of both regional as well as localized air quality impacts due to the proposed project.

San Diego County Criteria Pollutant Standards

Pursuant to California Health & Safety Code, Division 26, Part 3, Chapter 1, Section §40002, jurisdiction for regulation of air emissions from non-mobile sources within San Diego County has been delegated to the San Diego County Air Pollution Control District (APCD). As part of its air quality permitting process, the APCD has established thresholds for the preparation of Air Quality Impact Assessments (AQIA).

APCD Rule 20.2, which outlines these screening level criteria, states that any project that results in an emission increase equal to or greater than any of these levels, must:

> *"... demonstrate through an AQIA . . . that the project will not (A) cause a violation of a State or national ambient air quality standard anywhere that does not already exceed such standard, nor (B) cause additional violations of a national ambient air quality standard anywhere the standard is already being exceeded, nor (C) cause additional violations of a State ambient air quality standard anywhere the standard is already being exceeded, nor (D)*

prevent or interfere with the attainment or maintenance of any State or national ambient air quality standard."

For Projects whose stationary-source emissions are below these criteria, no AQIA is typically required, and project level emissions are presumed to be less than significant. In the absence of adopted thresholds of significance, the County of San Diego Department of Planning and Land Use (DPLU) accepts the use of these "screening criteria" as "Thresholds of Significance" by projects for the purposes of CEQA. These standards are compatible with those utilized elsewhere in the State (such as South Coast Air Quality Management District standards, etc.) as part of CEQA guidance documents. The screening-level criteria are listed in the below:

For CEQA purposes, these screening criteria are used as numeric methods to demonstrate that a project's total emissions (e.g. stationary and fugitive emissions, as well as emissions from mobile sources) would not result in a significant impact to air quality. Since APCD does not have AQIA thresholds for emissions of volatile organic compounds (VOCs), the use of the screening level for reactive organic compounds (ROC) from the CEQA Air Quality Handbook for the South Coast Air Basin (SCAB), which has stricter standards for emissions of ROCs/VOCs than San Diego's, is appropriate. However, the eastern portions of the county (east of the Tecate Divide) have atmospheric conditions that are characteristic of the Southeast Desert Air Basin (SEDAB). SEDAB is not classified as an extreme non-attainment area for ozone and therefore has a less restrictive screening-level. Projects located in the eastern portions of the County can use the SEDAB screening-level threshold for VOCs. No differentiation is made between construction and operation emission thresholds.

In the event that project emissions may approach or exceed these screening level criteria, modeling would be required to demonstrate that the project's ground-level concentrations, including appropriate background levels, are below the Federal and State Ambient Air Quality Standards. The applicable standards are shown in Table 1 on the following page.

The existing ambient conditions are compared for the with- and without project cases. If emissions exceed the allowable thresholds, additional analysis is conducted to determine whether the emissions would exceed an ambient air quality standard (i.e., the CAAQS values shown in Figure 4 above). Determination of significance considers both localized impacts (such as CO hotspots) and cumulative impacts. In the event that any criteria pollutant exceeds the threshold levels, the proposed action's impact on air quality are considered significant and mitigation measures would be required.

TABLE 1: Thresholds of Significance for Air Quality Impacts

Pollutant	Thresholds of Significance (Pounds per Day)[3]	Clean Air Act *less than significant* Levels (Tons per Year)
Carbon Monoxide (CO)	550	100
Oxides of Sulfur (SO_x)	250	100
Volatile Organic Compounds (VOC's) Reactive Organic Gasses (ROG's)	55[1] / 75[2]	50
Oxides of Nitrogen (NO_x)	250	50
Particulate Matter (PM_{10})	100	100

Source: SDAPCD Rule 1501, 20.2(d)(2), 1995; EPA 40CFR93, 1993

(1) Threshold for VOCs based on the threshold of significance for reactive organic gases from Chapter 6 of the CEQA Air Quality Handbook of the South Coast Air Quality Management District.

(2) Threshold for VOCs in the eastern portion of the County based on the threshold of significance for reactive organic gases from Chapter 6 of the CEQA Air Quality Handbook of the Southeast Desert Air Basin.

(3) Thresholds are applicable for either construction or operational phases of a project action.

In addition, under the General Conformity Rule, the EPA has developed a set of *de minimis* thresholds for all proposed federal actions in a non-attainment area for evaluating the significance of air quality impacts. It should be noted that the State (i.e., SDAPCD) standards are equal or more stringent than, the Federal Clean Air standards (a fact that can be verified through multiplication of the SDAPCD standards by 365 and dividing by 2,000). Development of the proposed project would therefore fall under the stricter SDAPCD guidelines.

Diesel Toxics Risk Factors

When diesel fuel burns in an engine, the resulting exhaust is made up of soot and gases representing hundreds of different chemical substances. The predominant constituents are:

- Nitrous Oxide
- Formaldehyde
- Sulfur Dioxide
- Carbon Dioxide
- Nitrogen Dioxide
- Benzene
- Hydrogen Sulfide
- Carbon Monoxide

Over ninety-percent (90%) of the exhaust emissions from a diesel engine consist of soot particles whose size is equal to, or less than, 10-microns in diameter. Particles of this size can easily be inhaled and deposited in the lungs. Diesel exhaust contains roughly 20-100 times more emissive particles than gasoline exhaust. Of principal concern are particles of cancer causing substances known as polynuclear aromatic hydrocarbons (PAH)'s.

There are inherent uncertainties in risk assessment with regard to the identification of compounds as causing cancer or other health effects in humans, the cancer potencies and Reference Exposure Levels (RELs) of compounds, and the

exposure that individuals receive. It is common practice to use conservative (health protective) assumptions with respect to uncertain parameters. The uncertainties and conservative assumptions must be considered when evaluating the results of risk assessments.

Since the potential health effects of contaminants are commonly identified based on animal studies, there is uncertainty in the application of these findings to humans. In addition, for many compounds it is uncertain whether the health effects observed at higher exposure levels in the laboratory or in occupational settings will occur at lower environmental exposure levels. In order to ensure that potential health impacts are not underestimated, it is commonly assumed that effects seen in animals or at high exposure levels could potentially occur in humans following low-level environmental exposure.

Estimates of potencies and RELs are derived from experimental animal studies or from epidemiological studies of exposed workers or other populations (*Source: CalEPA, USEPA, SCAQMD, SDAPCD, 2001*). Uncertainty arises from the application of potency or REL values derived from this data to the general human population. There is debate as to the appropriate levels of risk assigned to diesel particulates since the USEPA has not yet declared diesel particulates as a toxic air contaminant.

Using the SDAPCD Rule 1200 threshold, a risk concentration level of one in one million (1:1,000,000) of continuous 70-year exposure is considered less than significant. A risk exposure level of ten in one million (10:1,000,000) is acceptable if Toxic Best Available Control Technologies (T-BACT's) are used. It should be noted that this type of reporting is only strictly applicable to large populations (such as entire air basins) where the sample group is sizeable and the exposure time is long (which is not the case for project-level construction projects).

For purposes of analysis under this report, and to be consistent with the approaches used for other toxic pollutants, a functional comparison of the aforementioned risk probability per individual person exposed to construction contaminants will be examined. This approach has the advantage of not needing to quantify the population of the statistical group adjacent to the construction (which could yield false values) as well as allowing the per-person risk to be expressed as a final percentage. Of course, for a large enough population sample (i.e., a million people or more) the results are the same as CARB's predictions.

San Diego County Dust Control Measures

Finally, all construction activity within the project site should comply with the dust control provisions outlined in Section 87.428 of the County of San Diego Grading Ordinance. Namely,

- All clearing and grading shall be carried out with dust control measures adequate to prevent creation of a nuisance to persons or public or private property.
- Clearing, grading or improvement plans shall require that measures such as the following be undertaken to achieve this result: watering, application of surfactants,

shrouding, control of vehicle speeds, paving of access areas, or other operational or technological measures to reduce dispersion of dust.

ANALYSIS METHODOLOGY

The analysis criteria for air quality impacts are based upon the approach recommended by the *South Coast Air Quality Management District's (SCAQMD) CEQA Handbook*. The handbook establishes aggregate emission calculations for determining the potential significance of a proposed action. In the event that the emissions exceed the established thresholds, air dispersion modeling may be conducted to assess whether the proposed action results in an exceedance of an air quality standard. This methodology has been adopted by SDAPCD.

Ambient Air Quality Data Collection

The California Air Resources Board (CARB) monitors ambient air quality at approximately 250 air-monitoring stations across the state. Air quality monitoring stations usually measure pollutant concentrations 10 meters (approximately 30-feet) above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Ambient air pollutant concentrations in the San Diego Air Basin are measured at 10 air-quality-monitoring stations operated by the SDAPCD (refer to Figure 5 on the following page).

The nearest air quality monitoring stations with respect to the project site are located within the City of El Cajon (Redwood Avenue Station – ARB Station ID 80131) approximately 7.1 miles from the project site, and within the City of San Diego (12th Avenue Station – ARB Station ID 80138) approximately 16.5 miles from the project site.

The El Cajon station currently records NO_2, O_3, Total NMOC (Non-methane Organic Compound), Carbonyl Compounds, PM_{10}, $PM_{2.5}$, Toxics-Organics, Toxics-Metals, Toxics-Aldehydes, Cr^{6+} (Chromium), Outdoor Temperature, Relative Humidity, Wind Direction, and Horizontal Wind Speed, while the 12th Avenue station measures CO, SO_2, NO_2, O_3, PM_{10}, $PM_{2.5}$, Outdoor Temperature, Wind Direction, Horizontal Wind Speed and Solar Radiation.

Due to the type of equipment employed at each station, not every station is capable of recording the entire set of criteria pollutants identified in Table 1. Periodic audits are conducted of each station in accordance with the U.S. Environmental Protection Agency's 40 CFR, Part 58, Appendix A protocol with all equipment traceable to National Institute of Standards and Technology (NIST) standards. The typical accuracy of the equipment is ±15% for gasses (such as CO, NO_x, etc.) and ±10% for PM_{10}.

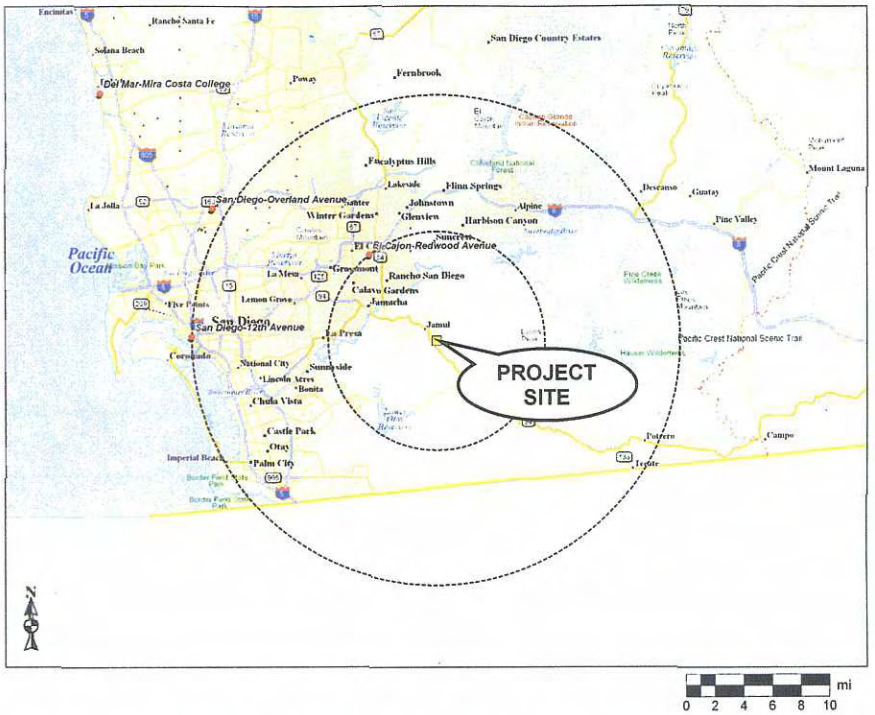

FIGURE 5: Ambient Air Quality Monitoring Station Location Map (ISE 7/06)

Construction Air Quality Modeling

Construction vehicle pollutant emission generators would consist primarily of haul truck activities such as earthwork haulage, concrete delivery and other suppliers, graders and pavers, contractor vehicles, and ancillary operating equipment such as diesel-electric generators and lifts. The analysis methodology utilized in this report is based upon the SCAQMD CEQA Handbook guidelines for construction operations. Construction emissions were based upon the EPA AP-42 Report generation rates identified by SCAQMD for the various classes of diesel construction equipment. The generation rates are identified in Table 2 on the following page.

Non Diesel-Fired Toxic Emission Modeling (PM_{10})

Fugitive dust generation from the proposed grading plan was analyzed using the methodology recommended in the SCAQMD CEQA Handbook guidelines for calculating 10-micron Particulate Matter (PM_{10}) due to earthwork. The analysis assumed low-wind speeds and active wet suppression control. Aggregate levels of PM_{10} based upon the best available surface grading estimates were calculated in pounds per day and compared to the applicable significance criteria shown in Table 1.

TABLE 2: Construction Equipment Pollutant Generation Levels by Class

	Generation Rates (pounds per horsepower-hour)				
Equipment Class	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**ROG**
Track Backhoe	0.0150	0.0220	0.0020	0.0010	0.0030
Dozer - D8 Cat	0.0150	0.0220	0.0020	0.0010	0.0030
Hydraulic Crane	0.0090	0.0230	0.0020	0.0015	0.0030
Loader	0.0150	0.0220	0.0020	0.0010	0.0030
Side Boom	0.0130	0.0310	0.0020	0.0015	0.0030
Water Truck	0.0060	0.0210	0.0020	0.0015	0.0020
Welding Rig	0.0110	0.0180	0.0020	0.0010	0.0020
Concrete Truck	0.0060	0.0210	0.0020	0.0015	0.0020
Concrete Pump	0.0110	0.0180	0.0020	0.0010	0.0020
Dump/Haul Trucks	0.0060	0.0210	0.0020	0.0015	0.0020
Paver	0.0070	0.0230	0.0020	0.0010	0.0010
Roller	0.0070	0.0200	0.0020	0.0010	0.0020
Scraper	0.0110	0.0190	0.0020	0.0015	0.0010

Source: U.S. EPA AP-42 "Compilation of Air Pollutant Emission Factors", 9/85. Ratings shown for full (100%) load factor.

Diesel-Fired Toxic Emission Modeling (CO, NO_x, SO_x, PM_{10})

For the purposes of this analysis, construction vehicle pollutant emission generators would consist entirely of construction activities associated with rough-grading operations (which is the worst-case pollution emission scenario). The analysis methodology utilized in this report is based upon the SCAQMD CEQA Handbook guidelines for construction operations. Construction emissions were based upon the EPA AP-42 Report generation rates identified by SCAQMD for the various classes of diesel construction equipment.

A screening risk assessment of diesel-fired toxics from construction haul trucks was performed using the *SCREEN3* dispersion model developed by the EPA's Office of Air Quality Planning and Standards. The SCREEN3 model uses a Gaussian plume dispersion algorithm that incorporates source-related and meteorological factors to estimate pollutant concentration from continuous sources. It is assumed that the pollutant does not undergo any chemical reactions, and that no other removal processes, such as wet or dry deposition, act on the plume during its transport from the source. The methodology is based upon the *Industrial Source Complex (ISC3)* source dispersion approach as outlined in the *EPA-454/B-95-003b* technical document.

Using the aforementioned concentrations obtained from the screening model, the diesel toxic risk can be defined as below:

$$Risk = \frac{F_{wind} \times EMFAC \times URF_{70\,year\,exposure}}{Dilution}$$

where, *Risk* is the excess cancer risk (probability in one-million);

F_{wind} is the frequency of the wind blowing from the exhaust source to the receptor (the default value is 1.0);

EMFAC is the exhaust particulate emission factor (the level from the screening model);

$URF_{70\ year\ exposure}$ is the Air Resource Board unit risk probability factor (300 x 10^{-6}, or 300 in a million cancer risk per $\mu g/m^3$ of diesel combustion generated PM_{10} inhaled in a 70-year lifetime based upon *ARB 1999 Staff Report from the Scientific Review Panel (SRP) on Diesel Toxics*); and,

Dilution is the atmospheric dilution ratio during source-to-receptor transport (the default value of 1.0 assumes no dilution)

Given the above assumptions for wind frequency and atmospheric dilution ratio, and substituting the CARB recommended value for the unit risk probability factor gives the following expression:

$$Risk = \frac{1 \times EMFAC \times 300x10^{-6}}{1} = 300x10^{-6} \times EMFAC \quad \text{per person}$$

Thus, the percentage of risk of cancer to any given person being exposed to a concentration of pollution equal to EMFAC (in $\mu g/m^3$) over a continuous period of 70-years would be:

$$Risk(\%) = (300x10^{-6} \times EMFAC) \times 100 = 300x10^{-4} \times EMFAC \quad \text{per person}$$

Where, it can be directly stated that a risk percentage of, say, 25% would indicate a 25% probability of inhaled cancer risk for the given level of exposure (EMFAC) if consumed continuously for a period of 70-years. A 50% probability would correspond to a 50:50 chance of inhaled cancer risk if consumed continuously for a period of 70-years, and so on up to a 100% risk, which would be considered an impact.

For the construction-related diesel-fired toxics analysis, an area-source consistent in dimensions with the proposed grading area will be assumed. A simplified elevated terrain model (which is consistent with the area surrounding the project site) with no building downwash corrections and a worst-case wind direction will be utilized.

Aggregate Vehicle Emission Air Quality Modeling

Motor vehicles emissions associated with the proposed project were calculated by multiplying the appropriate emission factor (in grams per mile) times the estimated trip length and the total number of vehicles. Appropriate conversion factors were then applied to provide aggregate emission units of pounds per day.

CARB estimates on-road motor vehicle emissions by using a series of models called the Motor Vehicle Emission Inventory (MVEI) Models. Four computer models, which form the MVEI are CALIMFAC, WEIGHT, EMFAC, and BURDEN.

The CALIMFAC model produces base emission rates for each model year when a vehicle is new and as it accumulates mileage and the emission controls deteriorate. The WEIGHT model calculates the relative weighting each model year should be given in the total inventory, and each model year's accumulated mileage. The EMFAC model uses these pieces of information, along with the correction factors and other data, to produce fleet composite emission factors. Finally, the BURDEN model combines the emission factors with county-specific activity data to produce to emission inventories.

For the proposed project, the *EMFAC 2002 Model v2.2* of the MVEI was run using input conditions specific to the SDAPCD region to predict vehicle emissions based upon worst-case (winter) year 2004 generation rates (which was the scenario examined in the project traffic study). A mix ratio consistent with the Caltrans ITS Transportation Project-Level Carbon Monoxide Protocol was used. This consisted of the following air standard Otto/Diesel-Cycle engine vehicle distribution percentages:

Light Duty Autos = 69.0
Light Duty Trucks = 19.4
Medium Duty Trucks = 6.4
Heavy Duty Trucks = 4.7
Buses = 0.0
Motorcycles = 0.5

The aggregate emission factors are provided as an attachment to this report.

Fixed Source Emissions Modeling

Fixed source emissions within the project site would consist of fireplace emissions from the residential dwellings and small residential uses (such as lawn mowers and barbeques) which would be classified as *non-significant* emission sources. These sources will be quantified (to the maximum extent possible) with impact potential assessed accordingly.

FINDINGS

Existing Climate Conditions

The climate of San Diego County is characterized by warm, dry summers and mild, wet winters and is dominated by a semi-permanent high-pressure cell located over the Pacific Ocean. This high-pressure cell maintains clear skies over the air basin for much of the year (refer to Figure 6 on the following page). It also drives the dominated onshore circulation and helps to create two types of temperature inversions, subsidence and radiation, that contribute to local air quality degradation.

Subsidence inversions occur during the warmer months, as descending air associated with the Pacific high-pressure cell comes into contact with cool marine air. The boundary between the two layers of air represents a temperature inversion that traps pollutants below it. Radiation inversion typically develops on winter nights, when air

near the ground cools by radiation, and the air aloft remains warm. A shallow inversion layer that can trap pollutants is formed between the two layers.

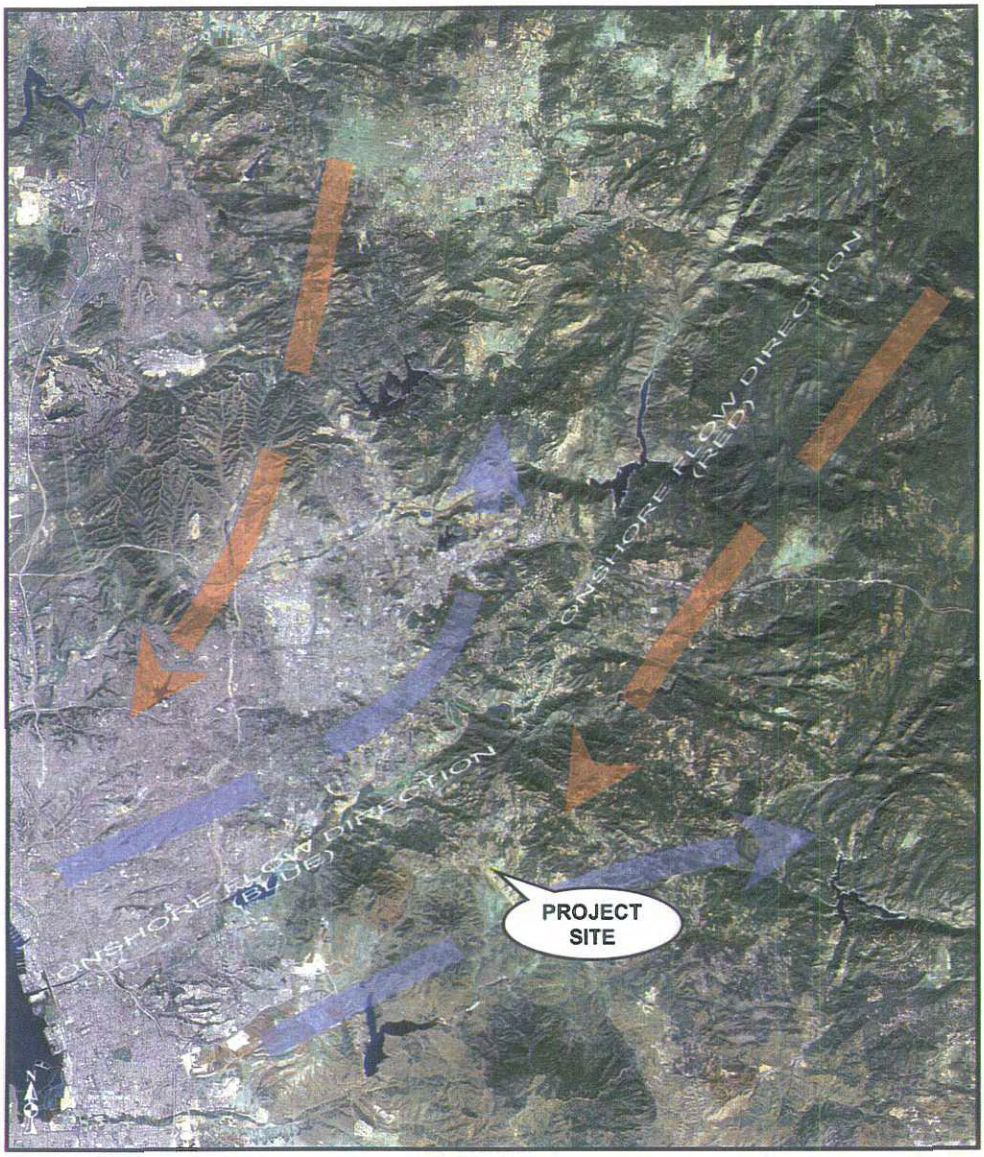

FIGURE 6: Project Air Basin Map (CNES 2004, ISE 6/06)

Occasionally during the months of October through February, offshore flow becomes a dominant factor in the regional air quality. These periods, known as the *so-called* "Santa Ana Conditions", are typically maximal during the month of December with wind speeds from the north to east approaching 35 knots and gusting to over 50 knots. This air movement is caused by clockwise pressure circulation over the Great Basin (i.e., the high plateau east of the Sierra Mountains and west of the Rocky Mountains including

most of Nevada and Utah) that results in significant downward air motion towards the ocean.

Stronger Santa Ana winds can have gusts greater than 60 knots over widespread areas and gusts greater than 100 knots in canyon areas. Frequently, the strongest winds in the basin occur during the night and morning hours due to the absence of onshore sea breezes. The overall result is a noticeable degradation in local air quality.

Finally, in the area of the proposed project site, the maximum and minimum average temperatures are 88° F and 40° F, respectively. Precipitation in the area averages 11.9 inches annually, 90 percent of which falls between November and April. The prevailing wind direction is from the west-northwest, with an annual mean speed of 6 to 8 miles per hour (NOAA 2003). Sunshine is usually plentiful in the proposed project area but night and morning cloudiness is common during the spring and summer. Fog can occur occasionally during the winter.

Existing Air Quality Levels

The project site is located in the south central portion of the San Diego Air Basin. The Basin continues to have a transitional-attainment status of federal standards for Ozone (O_3). The Basin is either in attainment or unclassified for federal standards of CO, SO_2, NO_2, PM_{10}, and lead. San Diego County areas are also in attainment of state air quality standards for all pollutants with the exception of O_3 and PM_{10}.

Tables 3a through -l provides a summary of the highest pollutant levels recorded at the closest identified monitoring stations for the last year available (2005) based upon the latest data from the CARB *ADAM* database system.

TABLE 3a: El Cajon Monitoring Station – Maximum Hourly O_3 Levels

Air Resources Board — iADAM

Highest 4 Daily Maximum Hourly Ozone Measurements
El Cajon-Redwood Avenue — FAQs

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Sep 21	0.102	Oct 9	0.096	Apr 15	0.092
Second High:	Dec 2	0.090	May 4	0.085	Jul 13	0.089
Third High:	Aug 15	0.086	May 31	0.085	Aug 28	0.088
Fourth High:	Oct 19	0.085	Apr 25	0.084	Sep 23	0.084
# Days Above Nat'l Standard:	0		0		0	
# Days Above State Standard:	1		1		0	
Year Coverage:	95		98		81	

Notes: All concentrations are expressed in parts per million.
State exceedances are shown in yellow. National exceedances are shown in orange.
National exceedances are also state exceedances.
An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

TABLE 3b: El Cajon Monitoring Station – Maximum Eight Hour O_3 Levels

Air Resources Board

iADAM

Highest 4 Daily Maximum 8-Hour Ozone Averages
El Cajon-Redwood Avenue

FAQs

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Sep 21	0.073	Apr 25	0.078	Apr 15	0.072
Second High:	Oct 12	0.071	Oct 9	0.077	Jul 13	0.071
Third High:	Oct 19	0.070	May 3	0.072	Aug 28	0.068
Fourth High:	Mar 9	0.069	May 31	0.071	Aug 26	0.067
# Days Above Nat'l Standard:	0		0		0	
Year Coverage:	95		98		81	

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All averages are expressed in parts per million.
National exceedances are shown in orange. An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

TABLE 3c: El Cajon Monitoring Station – Maximum Daily $PM_{2.5}$ Levels

Air Resources Board

iADAM

Highest 4 Daily PM2.5 Measurements
El Cajon-Redwood Avenue

FAQs

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Dec 6	43.7	Jan 1	44.4	Oct 21	40.9
Second High:	Dec 5	39.1	Jan 18	44.1	Dec 14	31.1
Third High:	Dec 4	36.9	Jan 19	43.1	Nov 6	29.7
Fourth High:	Nov 30	34.5	Jan 17	42.4	Nov 7	28.9
California:						
First High:	Dec 6	43.7	Jan 1	44.4	Oct 21	40.9
Second High:	Dec 5	39.1	Jan 18	44.1	Dec 14	31.1
Third High:	Dec 4	36.9	Jan 19	43.1	Nov 6	29.7
Fourth High:	Nov 30	34.5	Jan 17	42.4	Nov 7	28.9
# Days Above Nat'l Standard:	0		0		0	
3-Year Average 98th Percentile:	*		*		*	
1-Year 98th Percentile:	*		36.3		27.4	
National 3-Year Average:	*		*		*	
National Annual Average:	*		13.2		11.4	
State 3-Yr Maximum Average:	*		*		*	
State Annual Average:	*		*		*	

Go Backward One Year | New Top 4 Summary | Go Forward One Year

Notes: All concentrations are expressed in micrograms per cubic meter.
State exceedances are shown in yellow. National exceedances are shown in orange.
An exceedance is not necessarily a violation.
State and national statistics may differ for the following reasons:
State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods.
State and national statistics may therefore be based on different samplers.
State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
3 Year statistics represent the listed year and the 2 years before the listed year.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

TABLE 3d: El Cajon Monitoring Station – Maximum Daily PM_{10} Levels

Air Resources Board

iADAM

Highest 4 Daily PM10 Measurements

El Cajon-Redwood Avenue

FAQs

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Nov 23	230.0	Mar 22	55.0	Dec 12	48.0
Second High:	Dec 17	82.0	Mar 16	49.0	Dec 30	44.0
Third High:	Dec 5	66.0	Jan 16	48.0	Oct 7	41.0
Fourth High:	Nov 29	58.0	Oct 6	45.0	Dec 6	40.0
California:						
First High:	Nov 23	240.0	Mar 22	56.0	Dec 12	50.0
Second High:	Dec 17	86.0	Jan 16	49.0	Dec 30	45.0
Third High:	Dec 5	68.0	Mar 16	49.0	Dec 6	42.0
Fourth High:	Nov 29	60.0	Oct 6	45.0	Oct 7	41.0
Measured:						
# Days Above Nat'l Standard:		1		0		0
# Days Above State Standard:		5		1		0
Estimated:						
3-Yr Avg # Days Above Nat'l Std:		2.0		2.0		2.0
# Days Above Nat'l Standard:		6.1		0.0		0.0
# Days Above State Standard:		30.7		6.1		0.0
National 3-Year Average:		*		*		*
National Annual Average:		34.4		30.1		28.2
State 3-Yr Maximum Average:		38		35		35
State Annual Average:		34.9		30.3		28.6
Year Coverage:		100		100		98

Go Forward One Year | More Top 4 Summary | Go Forward One Year

Notes: All concentrations are expressed in micrograms per cubic meter.
State exceedances are shown in yellow. National exceedances are shown in orange.
An exceedance is not necessarily a violation.
State and national statistics may differ for the following reasons:
State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods.
State and national statistics may therefore be based on different samplers.
State statistics for 1998 and later are based on *local* conditions (except for sites in the South Coast Air Basin, where State statistics for 2002 and later are based on *local* conditions). National statistics are based on *standard* conditions.
State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
Measurements are usually collected every six days. Measured days counts the days that a measurement was greater than the level of the standard; Estimated days mathematically estimates how many days concentrations would have been greater than the level of the standard had each day been monitored.
3-Year statistics represent the listed year and the 2 years before the listed year.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

TABLE 3e: El Cajon Monitoring Station – Maximum Hourly NO_2 Levels

Air Resources Board — iADAM

Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements
El Cajon-Redwood Avenue — FAQs

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Oct 28	0.130	Jan 13	0.075	Nov 23	0.079
Second High:	Oct 22	0.078	Apr 27	0.069	Nov 15	0.074
Third High:	Oct 23	0.077	Feb 17	0.068	Nov 22	0.070
Fourth High:	Dec 17	0.073	Dec 27	0.067	Dec 21	0.070
# Days Above State Standard:	0		0		0	
Annual Average:	0.020		0.019		0.019	
Year Coverage:	96		98		98	

Notes: All concentrations are expressed in parts per million.
State exceedances are shown in yellow. National exceedances are shown in orange.
An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

TABLE 3f: San Diego 12th Avenue – Maximum Hourly Ozone Levels

Air Resources Board — iADAM

Highest 4 Daily Maximum Hourly Ozone Measurements
San Diego-12th Avenue — FAQs

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Apr 9	0.075	Sep 5	0.093	May 12	0.074
Second High:	Sep 21	0.075	Oct 9	0.087	Apr 6	0.067
Third High:	Mar 31	0.074	May 3	0.083	May 14	0.065
Fourth High:	Mar 10	0.071	May 2	0.079	Apr 15	0.062
# Days Above Nat'l Standard:	0		0		0	
# Days Above State Standard:	0		0		0	
Year Coverage:	94		98		53	

Notes: All concentrations are expressed in parts per million.
State exceedances are shown in yellow. National exceedances are shown in orange.
National exceedances are also state exceedances.
An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

TABLE 3g: San Diego 12th Avenue – Maximum 8-Hour Ozone Levels

Air Resources Board

iADAM

Highest 4 Daily Maximum 8-Hour Ozone Averages
San Diego-12th Avenue

FAQs

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Apr 9	0.063	Sep 5	0.071	Apr 17	0.056
Second High:	Jun 14	0.062	Oct 9	0.070	Mar 10	0.053
Third High:	Oct 8	0.062	May 2	0.065	May 12	0.053
Fourth High:	Oct 17	0.062	May 3	0.065	May 26	0.053
# Days Above Nat'l Standard:	0		0		0	
Year Coverage:	94		98		53	

Notes: All averages are expressed in parts per million.
National exceedances are shown in orange. An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

TABLE 3h: San Diego 12th Avenue – Maximum Carbon Monoxide Levels

Air Resources Board

iADAM

Highest 4 Daily Maximum 8-Hour Carbon Monoxide Averages
San Diego-12th Avenue

FAQs

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Dec 19	3.88	Jan 11	4.04	Apr 16	4.71
Second High:	Jan 25	3.66	Jan 10	3.77	Apr 17	4.40
Third High:	Dec 18	3.64	Jan 10	3.24	Apr 16	4.34
Fourth High:	Dec 20	3.46	Dec 11	3.16	Apr 17	4.19
California:						
First High:	Dec 18	3.88	Jan 10	4.04	Apr 16	4.71
Second High:	Jan 24	3.66	Jan 9	3.77	Apr 17	4.40
Third High:	Dec 17	3.64	Dec 10	3.16	Apr 18	3.97
Fourth High:	Dec 19	3.46	Jan 8	3.00	Apr 19	3.54
# Days Above Nat'l Standard:	0		0		0	
# Days Above State Standard:	0		0		0	
Year Coverage:	89		98		55	

Notes: All averages are expressed in parts per million.
State exceedances are shown in yellow. National exceedances are shown in orange.
An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

TABLE 3i: San Diego 12th Avenue – Maximum Nitrogen Dioxide Levels

Air Resources Board

iADAM

Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

San Diego-12th Avenue

FAQs

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Oct 21	0.111	May 3	0.094	Jan 13	0.091
Second High:	Oct 20	0.092	Jan 14	0.090	Jan 14	0.089
Third High:	Jan 17	0.088	Apr 27	0.085	Jan 10	0.088
Fourth High:	Dec 18	0.088	Jan 10	0.084	Jan 18	0.077
# Days Above State Standard:	0		0		0	
Annual Average:	0.021		0.020		*	
Year Coverage:	95		98		47	

Notes: All concentrations are expressed in parts per million.
State exceedances are shown in yellow. National exceedances are shown in orange.
An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

TABLE 3j: San Diego 12th Avenue – Maximum Sulfur Dioxide Levels

Air Resources Board

iADAM

Highest 4 Daily Maximum 24-Hour Sulfur Dioxide Averages

San Diego-12th Avenue

FAQs

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Jan 31	0.008	Sep 14	0.008	Apr 12	0.007
Second High:	Jan 24	0.008	Sep 5	0.008	Apr 11	0.006
Third High:	Jan 14	0.007	Jun 7	0.008	Apr 5	0.006
Fourth High:	Apr 7	0.007	Apr 23	0.008	Jul 11	0.005
# Days Above Nat'l Standard:	0		0		0	
# Days Above State Standard:	0		0		0	
Annual Average:	0.004		0.004		0.002	
Year Coverage:	90		98		44	

Notes: All averages are expressed in parts per million.
State exceedances are shown in yellow. National exceedances are shown in orange.
National exceedances are also state exceedances.
An exceedance is not necessarily a violation.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

TABLE 3k: San Diego 12th Avenue – Maximum PM_{10} Levels

Air Resources Board

iADAM

Highest 4 Daily PM10 Measurements
San Diego-12th Avenue

FAQs

Year:	2003		2004		2005	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Nov 23	139.0	Dec 17	68.0	Jan 10	76.0
Second High:	Dec 17	99.0	Jan 10	65.0	Feb 9	48.0
Third High:	Oct 29	62.0	Feb 9	53.0	Feb 3	45.0
Fourth High:	Dec 5	60.0	Mar 4	53.0	Mar 17	43.0
California:						
First High:	Nov 23	146.0	Dec 17	71.0	Jan 10	79.0
Second High:	Dec 17	104.0	Jan 10	68.0	Feb 9	49.0
Third High:	Oct 29	63.0	Feb 9	56.0	Feb 3	46.0
Fourth High:	Dec 5	63.0	Mar 4	55.0	Mar 17	44.0
Measured:						
# Days Above Nat'l Standard:	0		0		0	
# Days Above State Standard:	11		9		1	
Estimated:						
3-Yr Avg # Days Above Nat'l Std:	*0.0*		0.0		*	
# Days Above Nat'l Standard:	0.0		*0.0*		*	
# Days Above State Standard:	67.3		55.3		*	
National 3-Year Average:	34		35		31	
National Annual Average:	37.6		33.2		21.2	
State 3-Yr Maximum Average:	38		38		38	
State Annual Average:	38.5		34.5		*	
Year Coverage:	97		98		46	
	Go Forward One Year		Next Four Summary		Go Forward One Year	

Notes: All concentrations are expressed in micrograms per cubic meter.
State exceedances are shown in yellow. National exceedances are shown in orange.
An exceedance is not necessarily a violation.
State and national statistics may differ for the following reasons:
State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods.
State and national statistics may therefore be based on different samplers.
State statistics for 1998 and later are based on *local* conditions (except for sites in the South Coast Air Basin, where State statistics for 2002 and later are based on *local* conditions).
National statistics are based on *standard* conditions.
State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
Measurements are usually collected every six days. Measured days counts the days that a measurement was greater than the level of the standard; Estimated days mathematically estimates how many days concentrations would have been greater than the level of the standard had each day been monitored.
3 Year statistics represent the listed year and the 2 years before the listed year.
Year Coverage indicates how complete monitoring was during the time of the year when concentrations are highest. 0 means there was no coverage; 100 means there was complete coverage.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

TABLE 3I: San Diego 12th Avenue – Maximum $PM_{2.5}$ Levels

Air Resources Board — iADAM

Highest 4 Daily PM2.5 Measurements
San Diego-12th Avenue — FAQs

National:						
First High:	Oct 27	170.1	Jan 9	42.9	Jan 22	32.3
Second High:	Oct 26	104.6	Jan 8	42.3	Jan 23	28.6
Third High:	Jan 23	50.5	Jan 10	40.4	Jan 14	28.1
Fourth High:	Oct 17	49.3	Jan 18	38.2	Mar 10	26.6
California:						
First High:	Oct 27	170.1	Jan 9	42.9	Jan 22	32.3
Second High:	Oct 26	104.6	Jan 8	42.3	Jan 23	28.6
Third High:	Jan 23	50.5	Jan 10	40.4	Jan 14	28.1
Fourth High:	Oct 17	49.3	Jan 18	38.2	Mar 10	26.6
# Days Above Nat'l Standard:		2		0		0
3-Year Average 98th Percentile:		41		39		*
1-Year 98th Percentile:		46.9		33.7		*
National 3-Year Average:		15		14		*
National Annual Average:		15.5		13.8		*
State 3-Yr Maximum Average:		16		16		*
State Annual Average:		*		*		*

Notes: All concentrations are expressed in micrograms per cubic meter.
State exceedances are shown in yellow. National exceedances are shown in orange.
An exceedance is not necessarily a violation.
State and national statistics may differ for the following reasons:
State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods.
State and national statistics may therefore be based on different samplers.
State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
3-Year statistics represent the listed year and the 2 years before the listed year.
* There was insufficient (or no) data available to determine the value.

Source: CARB ADAM Ambient Air Quality Inventory – 11/06

Factors affecting ground level pollutant concentrations include the rate at which pollutants are emitted to the atmosphere, the height from which they are released, and topographic and meteorological features. Given these factors, the Escondido station currently reported exceedances of the State standards for O_3. All other criteria pollutants were within both federal and state standards. Monitoring for lead was discontinued entirely in 1998.

Construction Air Quality Emission Levels

The estimated construction equipment exhaust emissions are provided below in Tables 4a though -c for the typical construction activities identified at the project site. The construction activities would roughly be divided into the following phases:

- Rough Grading (i.e., clearing, grubbing, and general pad and road alignment formation). This typically consists of three distinct phases: mobilization, scraper hauls/finishing, and additional site finishing work.
- Underground Utility Construction (i.e., general trench-work, pipe laying with associated base material and cover, and ancillary earthwork required to facilitate placement of manholes, etc.). This is typically performed as a single phase.
- Paving Activities (which would include the movement of any remaining material as well as necessary curb and gutter work, road base material placement and blacktop). This is typically performed as a single phase.

Based upon these values, no significant air quality impacts are expected since levels would not rise above SDAPCD thresholds. No significant VOC emissions are expected. No remedial mitigation measures would be required.

TABLE 4a: Predicted Construction Emissions – Rough Grading Operations

Equipment Type	Qty. Used	HP	Daily Load Factor (%)	Duty Cycle (Hrs. / day)	Aggregate Emissions in Pounds / Day CO	NOx	SOx	PM_{10}	ROG
Dozer - D8 Cat	2	400	50	8	48.000	70.400	6.400	3.200	9.600
Loader	2	150	45	8	16.200	23.760	2.160	1.080	3.240
Water Truck	1	200	50	8	4.800	16.800	1.600	1.200	1.600
Scraper	2	300	35	8	18.480	31.920	3.360	2.520	1.680
				Total (Σ):	87.5	142.9	13.5	8.0	16.1
				Significance Threshold (SDAPCD)	550.00	250.00	250.00	100.00	55.00

TABLE 4b: Predicted Construction Emissions – Underground Utility Construction

Equipment Type	Qty. Used	HP	Daily Load Factor (%)	Duty Cycle (Hrs. / day)	Aggregate Emissions in Pounds / Day CO	NOx	SOx	PM_{10}	ROG
Track Backhoe	3	150	50	8	27.000	39.600	3.600	1.800	5.400
Loader	2	150	45	8	16.200	23.760	2.160	1.080	3.240
Concrete Truck	6	250	25	0.5	1.125	3.938	0.375	0.281	0.375
Dump/Haul Trucks	5	300	45	0.5	2.025	7.088	0.675	0.506	0.675
				Total (Σ):	46.4	74.4	6.8	3.7	9.7
				Significance Threshold (SDAPCD)	550.00	250.00	250.00	100.00	55.00

TABLE 4c: Predicted Construction Emissions – Surface Paving Activities

Equipment Type	Qty. Used	HP	Daily Load Factor (%)	Duty Cycle (Hrs. / day)	Aggregate Emissions in Pounds / Day CO	NOx	SOx	PM_{10}	ROG
Dump/Haul Trucks	25	300	45	0.5	10.125	35.438	3.375	2.531	3.375
Paver	1	150	35	8	2.940	9.660	0.840	0.420	0.420
Roller	2	150	35	8	5.880	16.800	1.680	0.840	1.680
				Total (Σ):	18.9	61.9	5.9	3.8	5.5
				Significance Threshold (SDAPCD)	550.00	250.00	250.00	100.00	55.00

Non Diesel-Fired Toxic Emission Levels (PM_{10})

The Peaceful Valley Ranch development site would have a total excavation quantity of 308,000 cubic-yards of material (i.e., sand, dirt, and rock) moved over the course of the proposed grading. Thus, for alluvium-type material, the project would have an approximate working weight of,

$$Total\ Weight = 308{,}000\ cubic\text{–}yards\ x\ \frac{1.3\ tons}{cubic\text{–}yard} = 400{,}400\ tons$$

According to the Project Engineer, out of the total quantity identified above, only roughly 80-percent of the working weight would be capable of generating PM_{10} (since the remaining quantity is assumed to be composed of rocky material not capable of being reducible to particles small enough to be of concern). Thus, for the purposes of analysis, the working weight of earthwork material capable of generating some amount of PM_{10} would be 0.8 x 400,400 tons or 320,320 tons.

The proposed earthwork operations at the Peaceful Valley Ranch project site would occur over a total of approximately 180 working days since the entire project site would be graded as a single project action. Thus, the average earthwork movement per day would be 320,320 tons / 180 working days or 1,779.5 tons/day.

Following the analysis procedure identified in the *SCAQMD CEQA Handbook* for PM_{10} emissions from fugitive dust gives the following semi-empirical relationship for aggregate respirable dust generation,

$$PM_{10} = 0.00112 \times \left[\frac{\left(\frac{WS}{5} \right)^{1.3}}{\left(\frac{SMC}{2} \right)^{1.4}} \right] \times ET$$

where, PM_{10} = Fugitive dust emissions in pounds,

WS = Ambient wind speed,

SMC = Surface Moisture Content, generally defined as the weight of the water (W_w) divided by the weight of the soil (W_s) as measured at the surface in grams per gram.

ET = Earthwork Tonnage moved per day,

Following the analysis guidelines identified in the *SCAQMD CEQA Handbook and* substituting a minimum SMC value of 0.25 (which extremely conservative for an ambient dirt condition) and a maximum credible wind speed scenario of 12 MPH (WS = 12) gives the following result,

$$PM_{10} = 0.00112 \times \left[\frac{\left(\frac{12}{5}\right)^{1.3}}{\left(\frac{0.25}{2}\right)^{1.4}} \right] \times 1779.5 = 0.0642 \times 1779.5 = 114.2$$

or, a level of slightly over 114 pounds of PM_{10} generated per day. It should be noted that surface wetting will be utilized during all phases of earthwork operations at a County defined minimum level of three times per day (in accordance with the intent of the San Diego County Grading Ordinance), thus a control efficiency of 34% to 68% reduction in fugitive dust can be applied per SCAQMD standards.

Assuming a median 50% control efficiency due to the aforementioned watering yields,

$$PM_{10} = 0.5 \times 114.2 = 57.1$$

or a total fugitive dust generated load of 57.1 pounds with BACT. This level is below the 100 pounds per day threshold established by SDAPCD. Therefore, no significant impacts are expected from this operation alone.

Additionally, following the analysis methods identified in the *SCAQMD CEQA Handbook* for PM_{10} emissions due to unpaved haul roads gives the following semi-empirical relationship for aggregate respirable dust generation,

$$PM_{10} = VMT \times \left[2.1 \left(\frac{SLP}{12}\right)\left(\frac{MVS}{30}\right)\left(\frac{MVW}{3}\right)^{0.7}\left(\frac{NW}{4}\right)^{0.5}\left(\frac{365-RD}{365}\right) \right]$$

where, PM_{10} = Fugitive dust emissions in pounds due to haulage on unpaved roads,
VMT = Vehicle Miles Traveled per day,
SLP = Soil Silt Loading in Percent,
MVS = Mean Vehicle Speed in miles per hour,
MVW = Mean Vehicle Weight in tons,
NW = Number of Wheels on the vehicle,
RD = Mean number of Rain Days with at least 0.01 inches of precipitation

Unpaved road travel due to construction activities is unknown at this time. For the purposes of analysis it will be assumed that contractors vehicles moving onsite would traverse a total of 25 miles per day (VMT). Substituting the applicable project values of VMT = 50, SLP = 6.0 (sand/gravel road with watering), MVS = 15 miles per hour, MVW = 3 tons (gross vehicular weight), NW = 4 wheels (average number of wheels), and RD = 44.0 (based upon U.S. Weather Bureau average precipitation year data within the San Diego Air Basin) gives the following result,

$$PM_{10} = 25 \times \left[2.1 \left(\frac{6}{12} \right) \left(\frac{15}{30} \right) \left(\frac{3}{3} \right)^{0.7} \left(\frac{4}{4} \right)^{0.5} \left(\frac{365 - 44.0}{365} \right) \right]$$

$$PM_{10} = 25 \times \left[2.1 \left(\frac{1}{2} \right) \left(\frac{1}{2} \right) (1)^{0.7} (1)^{0.5} \left(\frac{321}{365} \right) \right]$$

$$PM_{10} = 25 \times \left[2.1(0.5)(0.5)(1)(1)(0.8794) \right]$$

$$PM_{10} = 25 \times \left[0.4616 \right] = 11.54 \approx 11.5$$

or, a total (grading + off road travel) level of slightly over 57.1 + 11.5 = 68.6 pounds of PM_{10} generated per day. This level is below the 100 pounds per day threshold established by SDAPCD. Therefore, no significant impacts are expected.

Diesel-Fired Toxic Emission Levels (CO, NO_x, SO_x, PM_{10})

Onsite construction operations were found to generate worst-case daily pollutant levels of 87.5 pounds of CO, 142.9 pounds of NO_x, 13.5 pounds of SO_x, and 8.0 pounds of PM_{10}. These emissions are assumed to occur over any given 24-hour day (thereby providing an upper bound on expected emission concentrations) and direct comparison with CAAQS standards. Although all stable criteria pollutants are provided, it should be noted that for cancer-risk potential, only diesel-fired PM_{10} particulates is considered.

The proposed Peaceful Valley Ranch development has a maximum working area of roughly 181 acres or 7,884,360 square-feet (732,481 m^2) based upon data obtained from the project site plans. Based upon the onsite emission levels identified above, the aggregate emission rates for the various criteria pollutants in grams per second and grams per square-meter (m^2) per second (required as the input parameters for the *SCREEN3* model) are given below in Table 5. This methodology essentially applies all of the diesel emissions over this working area and provides a worst-case assessment of the impacts to sensitive receptors.

TABLE 5: Predicted Onsite Diesel-Fired Construction Emission Rates

Criteria Pollutant	Daily Site Emission Rates (grams/second)	Average Area Emission Rates (grams/m^2/second)
CO	0.4593	6.2704×10^{-7}
NO_x	0.7502	1.0241×10^{-6}
SO_x	0.0708	9.6657×10^{-8}
PM_{10}	**0.0419**	**5.7202×10^{-8}**

Total averaging time is 24 hours x 60 minutes/hour x 60 seconds/minute = 86,400 seconds per CAAQS standards.
One pound-mass = 453.592 grams

The expected diesel-fired construction emission concentrations from the *SCREEN3* modeling are shown below in Table 6. The output model results are provided as an attachment to this report. Based upon the model results, all criteria pollutants were below the recommended risk level with a PM_{10} risk probability of 0.087% (or 8.7 one-hundredths of a percent risk per 70-year exposure duration). No significant carcinogenic impact potential is expected due to proposed grading operations.

TABLE 6: SCREEN3 Predicted Diesel-Fired Emission Concentrations

Criteria Pollutant	Pollutant Concentration ($\mu g/m^3$)	Pollutant Concentration (ppm)	Pollutant Risk Probability (percent risk per person for 70-year exposure)	Significant?
CO	32.1	0.027	n/a	No
NO_x	52.4	0.027	n/a	No
SO_x	4.9	0.002	n/a	No
PM_{10}	**2.9**	**- -**	**0.087%**	No

Diesel risk calculated using: $Risk(\%) = (300x10^{-6} \times EMFAC) \times 100 = 300x10^{-4} \times EMFAC$, based upon ARB 1999 Staff Report from the Scientific Review Panel (SRP) on Diesel Toxics inhaled in a 70-year lifetime.

Conversion Factors (approximate):

- *CO: 1 ppm = 1,150 $\mu g/m^3$ @ 25 deg-C STP*
- *NO_x: 1 ppm = 1,880 $\mu g/m^3$ @ 25 deg-C STP*
- *SO_x: 1 ppm = 2,620 $\mu g/m^3$ @ 25 deg-C STP*
- *PM_{10}: 1 ppm = 1 g/m^3 (solid)*

Values rounded to three significant decimal places.

Additionally, the analysis identified a worst-case PM_{10} level of 2.9 $\mu g/m^3$ occurring at a distance of 882 meters (2,894 feet) from the boundaries of the construction site. This pollutant concentration is far below the California Ambient Air Quality Standard (CAAQS) of 50 $\mu g/m^3$ established by the State for any given 24-hour exposure period. Additionally, any nearby (standing) receptor would experience levels far less than the identified maximum (concentration values ranging between 0.5 to 1.0 $\mu g/m^3$ were indicated).

Since the transport of this pollutant diminishes as a function of the aforementioned Gaussian curve (also called the normal or bell curve since it illustrates the distribution of a random population sample, refer to Figure 7 on the following page), the project generated PM_{10} level is expected to approach zero at distances approaching twice the maximum distance (or roughly three standard deviations from the maximum).

This separation distance would be 882 x 2 meters or approximately 5,788 feet (1.09 ≈ 1.1 miles) from the proposed construction area. No cumulative contribution of PM_{10} from construction at the site would be physically possible beyond this point.

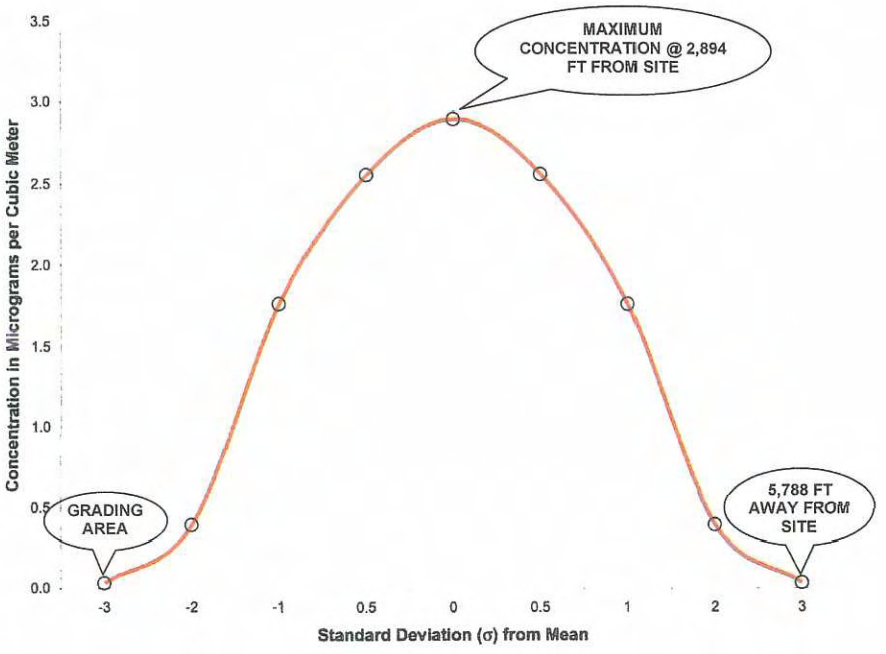

FIGURE 7: Predicted Diesel PM_{10} Dispersion Pattern / Concentration Levels (ISE 11/06)

Vehicular Emission Levels

Motor vehicles are the primary source of emissions associated with the proposed project area. Typically, uses such as the proposed Peaceful Valley Ranch residential development do not directly emit significant amount of air pollutants from onsite activities. Rather, vehicular trips to and from these land uses are the significant contributor.

The project is expected to have a total worst-case trip generation level of 750 ADT based upon the cumulative trip generation produced by single-family residential uses (*Source: LL&G, 1/04*). Currently the site is unused and has an effective starting ADT of zero (i.e., no appreciable emission offsets are attainable for this project).

The calculated emission levels are shown in Table 7 on the following page. A median speed of 45 MPH was used consistent with average values observed (i.e., combined freeway and surface street traffic activity). An average trip distance of 20 miles was assumed based upon the proposed service area of the new development. Based upon the findings, no project related trip-generated pollutant exceedances are indicated. No remedial mitigation measures are required.

TABLE 7: Predicted Vehicle Trip Emissions – Peaceful Valley Ranch Development

		Aggregate Trip Emissions in Pounds / Day				
Development Phase	**ADT**	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**ROG**
EMFAC Year 2004 Emission Rates (in grams/mile @ 45 MPH)						
Light Duty Autos (LDA):		4.237	0.590	0.003	0.009	0.149
Light Duty Trucks (LDT):		5.333	0.871	0.004	0.013	0.170
Medium Duty Trucks (MDT):		4.390	1.406	0.008	0.016	0.175
Heavy Duty Trucks (HDT):		7.578	12.835	0.139	0.213	0.613
Buses (UBUS):		13.806	14.657	0.137	0.133	1.165
Motorcycles (MCY):		43.384	1.673	0.002	0.036	3.303
Proposed Project Action @ 750 Net ADT						
Light Duty Autos (LDA):	518	96.7	13.5	0.1	0.2	3.4
Light Duty Trucks (LDT):	146	34.2	5.6	0.0	0.1	1.1
Medium Duty Trucks (MDT):	48	9.3	3.0	0.0	0.0	0.4
Heavy Duty Trucks (HDT):	35	11.8	19.9	0.2	0.3	1.0
Buses (UBUS):	0	0.0	0.0	0.0	0.0	0.0
Motorcycles (MCY):	4	7.2	0.3	0.0	0.0	0.5
Total (Σ) =	**750**	**159.1**	**42.3**	**0.3**	**0.7**	**6.4**
Significance Threshold (SDAPCD):		**550.0**	**250.0**	**250.0**	**100.0**	**55.0**

Assumes a 20-mile trip distance per vehicle. SDAPCD air basin. Wintertime conditions (50° F)

The proposed project action does not create a CO hotspot impact as defined under County accepted protocol. CO generation related to the aggregate traffic trips generation due to including the project amounted to approximately 124 pounds of CO per day out of a total of admissible permissible 550 pounds. Under conventional wisdom, if the aggregate sum is not exceeded, then no matter regardless of how much this sum is distributed, the result will never be to does not produce a significant impact where none was identified previously.

There are intersections and segments along SR-94 which either that currently fail (LOS D, E or F), but that failure is not due to the proposed project action, nor does the inclusion of this project further exacerbate the problem does not create a significant CO impact since dispersion of the total project generated CO load would not produce appreciable (non de minimis) changes in the segment/intersection concentrations.

Odor Impact Potential to Proposed Site

The inhalation of volatile organic compounds (VOCs) causes smell sensations in humans. There are four primary ways in which these odors can affect human health:

- The VOCs can produce toxicological effects;
- The odorant compounds can cause irritations in the eye, nose, and throat;
- The VOCs can stimulate sensory nerves that can cause potentially harmful health effects; and,
- The exposure to perceived unpleasant odors can stimulate negative cognitive and emotional responses based on previous experiences with such odors.

Development of the proposed project site and maintenance of the proposed equestrian facility could generate trace amounts (less than 1 $\mu g/m^3$) of substances such as ammonia, carbon dioxide, hydrogen sulfide, methane, dust, organic dust, and endotoxins (i.e., bacteria are present in the dust). Additionally, proposed onsite uses could generate such substances as volatile organic acids, alcohols, aldehydes, amines, fixed gases, carbonyls, esters, sulfides, disulfides, mercaptans, and nitrogen heterocycles.

To further reduce the potential for air pollutants or odors to result from the project, an Animal Waste, Fly and Vector Control Plan (*Source: RBF, 3/04*) was prepared for the treatment and handling of animal waste, flies, and vectors at the Peaceful Valley Ranch site that will be conditioned by the Major Use Permit (MUP). The guidelines, which are outlined in that document, are meant to be adhered to by both the operator of the equestrian facilities, as well as by visitors to the site, as applicable, to ensure human and animal health and safety, both onsite and offsite. The Plan establishes measures for storage and removal of animal waste, methods of insect and rodent control, minimizing the presence of open water onsite, general waste management education, and general sanitation practices.

It should be noted, however, that odor generation impacts due to the project are not expected to be significant since, a) the nearest existing sensitive receptor is located over 250 feet away from the project, and b) any odor generation would be intermittent and would be controlled by the Animal Waste, Fly and Vector Control Plan. As a result, no significant air quality impacts are expected to surrounding residential receptors. No mitigation for odors is identified.

Residential Fixed Emission Impact Potential

In 1988, the EPA adopted a New Source Performance Standards (NSPS) for woodstoves and small wood burning devices based upon Particulate Emission levels (the largest emitted criteria pollutant). It was noted that fireplaces and woodstoves are not equivalent devices since a typical fireplace produces much more particulate matter (PM_{10}) per hour or in a typical evening's use than a typical woodstoves because of the fireplace's higher burn rate (amount of wood burned per hour). "*Equivalence*" between standards for fireplaces and woodstoves was found not to be possible. Thus, the EPA's NSPS does not apply to all fireplaces or other devices that do not meet the definition of "*affected facility*" in the NSPS.

These fireplace units would consist of:

- Traditional masonry fireplaces. These are the traditional site-built fireplaces constricted of masonry. Though normally built from bricks, several manufacturers now offer factory-made cast masonry core components around which a masonry fireplace can be constructed. Two such devices are the Frisch-Rosin and Buckley-Rumford fireplaces. Masonry fireplaces are extremely expensive and are generally found only in high-end new construction. In addition, they raise significant seismic concerns, which add to cost.

- Zero-clearance fireplaces. These are metal fireplaces designed to be installed into wood framing. They are sometimes called "factory-built fireplaces" or "builder boxes." They are open fireplaces and do not meet the EPA definition of woodstove because they have an air to fuel ratio greater than 35 to 1. They are cheap and extremely common in new construction. Nationally, 80% of the 27 million U.S. fireplaces are zero-clearance fireplaces.

- Masonry heaters. Masonry heaters are a traditional northern European means of heating using a small open firebox set in a massive masonry structure with horizontal and downward flues though which gases are channeled before reaching the chimney. Masonry heaters store the heat from intermittent rapid fires and radiate, it back to the building. Unlike the three categories above, masonry heaters may have relatively hi thermal efficiency and may be used for heating purposes rather than aesthetic or recreational purposes.

There are two types of devices commonly called fireplaces that are subject to the woodstove NSPS or, in the case of some pellet-burning devices with air to fuel ratios greater than 35 to 1, which can meet the NSPS emission limits:

- Certified fireplace inserts. These are woodstoves, including some pellet stoves, designed to be retrofitted into a traditional masonry fireplace.

- Certified "EPA fireplaces." These are woodstoves designed to be installed into wood framing in the same manner as a zero-clearance fireplace. Unlike a zero clearance fireplace, these devices meet the woodstove definition in the NSPS.

In addition to the above wood-burning devices, there are two types of gas-burning devices that are called "fireplaces." They are not subject to the NSPS:

- Gas-burring fireplaces. These are factory-built fireplaces that are available as inserts or zero-clearance models and with several different venting arrangements.

- Gas logs. These are gas burners installed in a masonry or factory-built fireplace to replicate the look of a traditional wood-burning fireplace.

According to EPA document AP-42, emission factors are used by local and state agencies in calculating emission inventories; The AP-42 particulate emission factor for wood-burning fireplaces is 17.3 grams per kilogram of wood burned. The EPA's emission factors are based on limited data. Table 8 on the following page sets forth results from the available fireplace studies, which can be used, consistent with the NSPS.

The maximum allowable PM_{10} emission levels (based upon SDAPCD Rule 1501, 20.2(d)(2), 1995 and EPA 40CFR93, 1993) for the Peaceful Valley Ranch residential development due to combined fireplace operation within each of the 48 dwelling-units is 100 pounds per day. The average emission level (considered reasonable based upon the variation of wood types, material combustion rates, and end-user heating requirements) was found to be approximately 53 grams of PM_{10} per hour for a normal fireplace utilization rate.

TABLE 8: Recorded Fireplace Emission Levels per AP-42 and Others

Study	Year	Average PM_{10} Emission Factor (g/kg)	Average PM_{10} Emission Rate (g/hr)
Reitz	1993	9	80
Jaasma	1992	10 to 13	32 to 44
Colorado/Shelton	1987	15	53
Dasch	1982	8	33
EPA	1975	10	76
		Average Emission Level (g/hr):	**53**

Source: EPA AP-42, Various

If all the wood-burning fireplaces within the development area were running simultaneously (a highly improbable, but worst-case condition), the pollution generation rate would be 48 lots x 53 grams/hour-home or 2,544 grams (2.5 kilograms) of PM_{10} per hour. This equates to approximately 5.7 pounds per hour and would exceed the allowable threshold in roughly 17.5 hours, which is longer than the normal nighttime operational time (which is typically four hours and would produce a total of roughly 22.8 pounds). Thus operational emissions would not be deemed impactive under this context.

CONCLUSIONS / RECOMMENDATIONS

Aggregate Project Emissions

The aggregate construction and operational emission levels produced by the proposed Peaceful Valley Ranch residential development project are shown below in Tables 9a and –b respectively. Based upon the analysis, no construction- or residual project-related air quality exceedances were identified for any of the identified criteria pollutants.

TABLE 9a: Aggregate Construction Emissions – Peaceful Valley Ranch Development

	Aggregate Emissions in Pounds / Day				
OPERATIONAL SCENARIO	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**ROG**
Construction Vehicle Emissions (Table 4a):	87.5	142.9	13.5	8.0	16.1
Surface Grading Dust Generation:				57.1	
Off-Road Vehicle Travel:				11.5	
Total (Σ):	**87.5**	**142.9**	**13.5**	**76.6**	**16.1**
Significance Threshold (SDAPCD):	**550.0**	**250.0**	**250.0**	**100.0**	**55.0**

TABLE 9b: Aggregate Operational Emissions – Peaceful Valley Ranch Development

	Aggregate Emissions in Pounds / Day				
OPERATIONAL SCENARIO	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**ROG**
Operational Vehicular Traffic Generation (Table 7):	159.1	42.3	0.3	0.7	6.4
Fireplace Emissions (4 Hour Burn Time):				22.8	
Total (Σ):	**159.1**	**42.3**	**0.3**	**23.5**	**6.4**
Significance Threshold (SDAPCD):	**550.0**	**250.0**	**250.0**	**100.0**	**55.0**

Additionally, no localized cumulative exceedances of CAAQS standards were indicated. No additional mitigation would be required as part of this project. No adverse air basin impacts were identified.

Past, Present, and Reasonably Anticipated Future Project Impacts

The proposed Peaceful Valley Ranch development would have a worst-case impact radius for construction emissions of 882 meters based upon the SCREEN3 dispersion modeling. Since the SCREEN3 model utilizes a Gaussian dispersion rule, the maximum level would disperse to background levels at a distance of roughly twice the maximum impact radius, or 1,764 meters (5,787 feet or 1.1 miles). Any past, present, and/or reasonably anticipated future projects within this 1.1 mile radius which construct concurrently would need to be assessed for cumulative impact potential. An extensive list of such current and future proposed projects is provided in Table 10 on the following page.

Currently there are only three projects, which would have the potential to reside within this impact radius, namely: the Jamul Indian Village Casino development, the Blanco Parcel Map development; TPM 20599, and the Hendrix Subdivision; TM 5154RPL. None of these projects, assuming a compliant maximum pollution generation level, would cumulatively produce concentration exceedances as identified by CARB. Therefore, no cumulative impact potential is indicated.

Consistency with Regional Air Quality Management Plans

Finally, the San Diego Regional Air Quality Strategy (RAQS) establishes what could be thought of as an "emissions budget" for the San Diego Air Basin. This budget takes into account existing conditions, planned growth based on General Plans for cities within the San Diego Association of Governments (SANDAG) region, and air quality control measures implemented by the SDAPCD.

TABLE 10: Cumulatively Considerable Projects within the SRA

Reference/Project Number	Name	Characteristics/Status	Impacts
Fee-to-Trust Transfer and Casino Project	Jamul Indian Village	*(Alternative A – Preferred Project)* Gaming casino, hotel, event center, health center, housing, parking garage, tribal government center **Status:** Pending	*Traffic* ▪ 9,600 ADT generated ▪ (Worst-case alternative scenario: 37,000 ADT) ▪ Impacts on SR-94, Jamacha to Steele Canyon Road; SR-94, Steele Canyon to Lyons Valley Road; SR-94, Lyons Valley Road to Maxfield Road; SR-94, Maxfield Road to Melody Road ▪ Impacts on SR-94 between Jamacha Boulevard and Jamacha Road ▪ Impacts on SR-94/Jamacha Road/SR 54, SR-94/Cougar Canyon Road, SR-94/Steele Canyon Road *Noise* ▪ Potential noise impacts resulting from increased on-site (casino patrons and service vehicles) and off-site (SR-94) traffic, project construction, mechanical equipment, deliveries and loading. *Biology* ▪ Substantial clearing and grading required ▪ Potential for impacts on Coastal sage scrub, Grazed Coastal sage scrub, Coast Live Oak Riparian Woodland ▪ 35.9 acres of grazed Coastal sage scrub ▪ 0.05-acre wetland habitat *Cultural* ▪ Significant cultural resources exist on the project site. The tribe will implement all mitigation measures presented by SHPO during the Section 106 consultation process.

TABLE 10 (cont.): Cumulatively Considerable Projects within the SRA

Reference/Project Number	Name	Characteristics/Status	Impacts
TPM 20599 RPL1 Log No. 01-19-007	Blanco Parcel Map	4 SF Residential Lots 6.2 acres **Status:** Pending	*Traffic* ▪ 48 ADT generated ▪ Impacts on Melody Road/SR-94 along project frontage ▪ SR-94/Melody Road intersection impacted *Biology* ▪ Potential impacts to Diegan coastal sage scrub *Cultural* ▪ There is a significant cultural resources located on property, Site number CA-11,792. This site is significant under RPO. Two mitigation measures are proposed for impacts to this cultural resource site; 1) Monitoring during grading, and 2) The site will be preserved through an open space easement.
TPM 20550	Morgan Minor Subdivision	2 SF Estate Lots **Status:** Approved: Mitigated Negative Declaration dated July 12, 2001.	*Traffic* ▪ 24 ADT generated *Biology* ▪ 0.20 acre Diegan coastal sage scrub ▪ 0.10 acre Southern mixed chaparral ▪ 0.007 acre freshwater seep *Cultural* ▪ No impacts identified. Based on MND dated 7/12/01.
TPM 20868 ER 04-19-016	Steinbarth Minor Subdivision	2 SF Lots 5.14 acres **Status:** Pending	*Traffic* ▪ 24 ADT generated *Biology* ▪ Potential impacts on Diegan coastal sage scrub ▪ Impacts to non-native grassland *Cultural* • No impacts identified

TABLE 10 (cont.): Cumulatively Considerable Projects within the SRA

Reference/Project Number	Name	Characteristics/Status	Impacts
P03-101 ER 0319016A	AT&T Wireless Facility	1 SF Residence 20.9 acres **Status:** Pending	*Traffic* ▪ 0 ADT generated *Biology* ▪ Potential impacts on Diegan coastal sage scrub (fuel modification) *Noise* ▪ Potential noise impacts to adjacent land uses *Cultural* ▪ No known cultural resources are located on this site. Therefore impacts are not anticipated to occur.
TM 5154 RPL1 Log 98-19-021	Hendrix Subdivision	5 SF Estate Lots 11.21 acres **Status:** Pending	*Traffic* ▪ 60 ADT generated ▪ Jefferson Road/SR-94 intersection impacted *Biology* ▪ acres Diegan coastal sage scrub *Cultural* ▪ No impacts identified. Based on a County letter dated April 5, 2001.
TM 5289RPL2 ER 03-19-04	Jamul Highlands	23 SF Residential Lots 60 acres (includes approximately 36 acres of biological open space) **Status:** Pending	*(currently under review)* *Traffic* ▪ 300 ADT generated ▪ Traffic impacts on Jamul Highlands Road *Biology* ▪ 0.31 acre Diegan Coastal sage scrub ▪ 3.04 acres Southern Live Oak Riparian Forest ▪ 20.21 acres Chamise Chaparral ▪ 0.60 acre Urban Habitat *Cultural* ▪ Impacts mitigated by an open space easement for portion of a motorcycle trail in an archeological site.

TABLE 10 (cont.): Cumulatively Considerable Projects within the SRA

Reference/Project Number	Name	Characteristics/Status	Impacts
TPM 20594 Log No. 01-19-004	Pioneer Minor Subdivision	3 SF Estate Lots **Status:** Approved: Mitigated Negative Declaration dated August 2, 2001.	*Traffic* ▪ 36 ADT generated *Biology* ▪ 0.3 acre (mitigation) Tier II Buckwheat scrub ▪ 0.6 acre (mitigation) Tier III non-native grassland *Cultural* ▪ No impacts identified.
Otay Ranch - Village 19 (Villages 14 and 16 as Open Space)	Jamul Rural Estate Area	20 SF Estate Lots **Status:** Project is ongoing and potential significant near-term and long-term impacts are speculative.	*Traffic* ▪ 240 ADT generated ▪ Millar Ranch Road/SR-94 intersection impacted *Noise* ▪ Potential increase in noise resulting from traffic *Biology* ▪ Potential significant impacts to Coastal sage scrub, woodland habitat (to be determined) *Cultural* Based on the Final Program Environmental Impact Report prepared for Otay Ranch, dated December 1992, there are significant cultural resources located on this site.
	Jamul Estates II	68 lots (estimated) **Status:** *This project is reasonably foreseeable in the future, however; no specific design has been proposed.*	*Traffic* ▪ 816 ADT generated (estimated) No project studies have been completed at this time. Therefore, potential impacts are unknown.
TM 5213RPL2 Log No. 78-19-01A	Mintz Subdivision	10 SF Residential Estate Homes 25 acres **Status:** Pending	*Traffic* ▪ 120 ADT generated
TPM 20626	--	3 SF Residential Estate Homes **Status:** Pending	*Traffic* ▪ 36 ADT generated
--	Vista Del Sol Subdivision	12 Residential Estate du's 80 acres **Status:** Pending	*Traffic* ▪ 140 ADT generated

TABLE 10 (cont.): Cumulatively Considerable Projects within the SRA

Reference/Project Number	Name	Characteristics/Status	Impacts
--	--	20 SF Residential Estate Units **Status:** Pending	*Traffic* ▪ 240 ADT generated
TM 5460RPL1	Simpson Farms	98 SF Residential Lots and 1 Commercial Lot (development of commercial lot not a part of the project proposed at this time, but estimated to be 115,000 SF for future development) 161.95 acres **Status:** Pending	*Traffic* ▪ 6,514 ADT generated (estimate) *Noise* ▪ Potential increase in noise resulting from traffic on adjacent SR 94 *Biology* ▪ Resources that could be impacted by development or preserved by conservation include: 90.0 acres of Diegan coastal sage scrub; 2.1 acres of Englemann oak woodland; 33.9 acres agricultural fields; 0.1 acre of Mule fat scrub; 10.7 acres Non-native grassland; 2.7 acres urban/undeveloped; Dwarf Plantain occurs onsite. *Cultural* ▪ A possible historic structure, the Barrett/Simpson house, is under review to determine the historical significance. Agricultural ▪ Conversion of historically dry farmed Farmland of Local Importance and Grazing Land to non-agricultural uses. Aesthetics ▪ Adjacent to SR 94, a Primary Scenic Route.

The "emissions budget" accounts for current emissions associated with the proposed project as well as previously approved projects consistent with current General Plan policies. A list of potentially cumulative projects previously within this Sub Regional Area (SRA) is again shown above in Table 10. To determine whether the proposed project is consistent with the RAQS requires a comparison of net emissions from the proposed development to the emissions associated with previously approved and accounted for plans (commonly known as the Consistency Criterion of the RAQS).

None of the other projects considered in this cumulative analysis were found to have significant air quality impacts. All of the projects considered in the cumulative analysis, with one exception, are consistent with the existing County General Plan. The one exception is the proposed project, which proposes a General Plan Amendment. However, the Peaceful Valley Ranch project proposes fewer homes than what would be permitted under the General Plan designation that currently applies to the property.

Under the current General Plan designation, the allowable density for the Peaceful Valley Ranch property would generate a total assumed yield of 53 residential units; the project proposes a total of 50 development lots (47 residential lots plus 3 non-residential lots). Therefore, since the regional growth projections are based on the assumed maximum yield under the density allowed under the current General Plan designations, the proposed project proposes fewer development lots than that assumed in the regional growth projections.

The proposed project and the other projects within the cumulative study area propose fewer numbers of homes than what was evaluated in regional growth projections. The regional growth projections are calculated by SANDAG, based on the maximum yield of the existing General Plan designations. State and local air pollution control districts then utilize these projections. As a result, the past, current, and future development that will occur within the cumulative study area, including the proposed project, will be consistent with the State Implementation Plan (SIP). Because the project is consistent with the SIP, it is also consistent with the Regional Air Quality Standards. Therefore, criteria pollutants identified in the air quality analysis for the project such as carbon monoxide, sulfur dioxides, volatile organic compounds, oxides of nitrogen, and particulate matter are less than significant and will remain below the threshold levels for adverse air quality impacts. Therefore, the proposed project and other projects within the cumulative study area would be consistent with the RAQs, and potential impacts to air quality are considered to be less than cumulatively considerable.

Should you have any questions regarding the above conclusions, please do not hesitate to contact me at (858) 451-3505.

Sincerely,

Rick Tavares, Ph.D.
Project Principal
Investigative Science and Engineering, Inc.

Cc: Ryan Taylor, ISE

Attachments: EMFAC 2002 Emission Factors– SDAPCD Air Basin (2004)
SCREEN3 Model Output for Criteria Pollutants

EMFAC 2002 Emission Factor Tabulations – Scenario Year 2004

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Title    : San Diego APCD Avg 2004 Winter
Version  : Emfac2002 V2.2 Sept 23 2002
Run Date : 01/07/04 13:22:39
Scen Year: 2004 -- Model Years: 1965 to 2004
Season   : Winter
Area     : San Diego (SD)
*******************************************************************************
     Year:2004 -- Model Years 1965 to 2004 Inclusive --  Winter
     Emfac2002 Emission Factors: V2.2 Sept 23 2002

     San Diego (SD)                    San Diego (SD)                San Diego (SD)

                          Table   1:  Running Exhaust Emissions (grams/mile)

     Pollutant Name: Reactive Org Gases        Temperature:  50F  Relative Humidity:  40%

     Speed
      MPH       LDA      LDT      MDT      HDT      UBUS     MCY      ALL

        5     0.952    1.018    1.108    3.545    9.410    6.252    1.142
       10     0.633    0.688    0.747    2.513    6.276    4.908    0.774
       15     0.443    0.488    0.528    1.854    4.364    4.034    0.550
       20     0.326    0.363    0.390    1.419    3.161    3.471    0.410
       25     0.252    0.283    0.302    1.125    2.386    3.130    0.320
       30     0.205    0.232    0.245    0.922    1.876    2.957    0.263
       35     0.175    0.199    0.209    0.780    1.536    2.927    0.226
       40     0.157    0.180    0.187    0.681    1.311    3.038    0.203
       45     0.149    0.170    0.175    0.613    1.165    3.303    0.192
       50     0.148    0.170    0.171    0.568    1.078    3.763    0.191
       55     0.155    0.177    0.177    0.542    1.039    4.490    0.199
       60     0.171    0.195    0.191    0.533    1.044    5.607    0.218
       65     0.198    0.225    0.218    0.539    1.091    7.327    0.251


     Pollutant Name: Carbon Monoxide           Temperature:  50F  Relative Humidity:  40%

     Speed
      MPH       LDA      LDT      MDT      HDT      UBUS     MCY      ALL

        5     9.684   12.679   11.448   42.134   79.498   49.936   12.502
       10     8.164   10.520    9.177   28.256   52.563   40.999   10.086
       15     7.056    8.976    7.636   19.981   36.748   35.434    8.438
       20     6.223    7.840    6.554   14.897   27.165   32.235    7.273
       25     5.585    6.990    5.777   11.709   21.230   30.866    6.430
       30     5.092    6.351    5.213    9.702   17.541   31.110    5.814
       35     4.713    5.877    4.811    8.475   15.321   33.009    5.370
       40     4.430    5.541    4.541    7.805   14.146   36.877    5.068
       45     4.237    5.333    4.390    7.578   13.806   43.384    4.897
       50     4.134    5.254    4.362    7.760   14.243   53.755    4.860
       55     4.133    5.325    4.476    8.380   15.531   70.156    4.981
       60     4.263    5.587    4.775    9.548   17.902   96.445    5.313
       65     4.575    6.120    5.338   11.480   21.810  139.659    5.950
```

Pollutant Name: Oxides of Nitrogen Temperature: 50F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	1.039	1.574	2.387	19.889	26.531	1.221	2.213
10	0.899	1.345	2.038	16.714	20.923	1.272	1.880
15	0.796	1.180	1.791	14.560	17.390	1.324	1.647
20	0.720	1.061	1.617	13.133	15.187	1.379	1.486
25	0.666	0.976	1.499	12.255	13.891	1.435	1.377
30	0.628	0.919	1.424	11.819	13.264	1.493	1.312
35	0.604	0.884	1.385	11.770	13.188	1.552	1.282
40	0.591	0.868	1.379	12.099	13.635	1.612	1.286
45	0.590	0.871	1.406	12.835	14.657	1.673	1.323
50	0.600	0.891	1.467	14.056	16.400	1.734	1.399
55	0.621	0.932	1.569	15.901	19.145	1.797	1.520
60	0.655	0.996	1.723	18.597	23.389	1.860	1.702
65	0.706	1.089	1.946	22.508	30.003	1.923	1.968

Pollutant Name: Sulfur Dioxide Temperature: 50F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.010	0.012	0.020	0.144	0.147	0.003	0.017
10	0.007	0.009	0.015	0.142	0.143	0.003	0.015
15	0.006	0.007	0.012	0.141	0.141	0.002	0.013
20	0.005	0.006	0.011	0.140	0.139	0.002	0.012
25	0.004	0.005	0.009	0.140	0.138	0.002	0.011
30	0.004	0.005	0.009	0.140	0.138	0.002	0.011
35	0.003	0.004	0.008	0.140	0.137	0.002	0.010
40	0.003	0.004	0.008	0.139	0.137	0.002	0.010
45	0.003	0.004	0.008	0.139	0.137	0.002	0.010
50	0.003	0.004	0.008	0.139	0.137	0.002	0.010
55	0.003	0.004	0.008	0.140	0.137	0.002	0.010
60	0.004	0.005	0.009	0.140	0.138	0.003	0.011
65	0.004	0.005	0.009	0.140	0.138	0.004	0.011

Pollutant Name: PM10 Temperature: 50F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.057	0.084	0.095	0.805	0.667	0.066	0.102
10	0.038	0.056	0.065	0.631	0.481	0.052	0.073
15	0.026	0.039	0.047	0.505	0.360	0.043	0.054
20	0.019	0.029	0.035	0.414	0.279	0.037	0.042
25	0.015	0.023	0.027	0.347	0.224	0.034	0.034
30	0.012	0.018	0.022	0.297	0.186	0.032	0.028
35	0.010	0.016	0.019	0.260	0.161	0.032	0.024
40	0.009	0.014	0.017	0.233	0.143	0.033	0.022
45	0.009	0.013	0.016	0.213	0.133	0.036	0.020
50	0.009	0.013	0.015	0.200	0.127	0.041	0.019
55	0.009	0.013	0.016	0.191	0.126	0.048	0.019
60	0.009	0.014	0.016	0.187	0.130	0.060	0.020
65	0.011	0.016	0.018	0.187	0.138	0.078	0.021

SCREEN3 Model Output for Criteria Pollutants: CO, NO_x, SO_x, and PM_{10}

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PEACEFUL VALLEY RANCH - CO

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

  DIST      CONC              U10M    USTK   MIX HT    PLUME   MAX DIR
   (M)   (UG/M**3)   STAB   (M/S)   (M/S)     (M)    HT (M)    (DEG)
-------  ----------  ----  -----   -----  -------  -------  -------
    20.    13.76        5     1.0     1.0 10000.0     3.00      45.
   100.    15.76        5     1.0     1.0 10000.0     3.00      45.
   200.    18.12        5     1.0     1.0 10000.0     3.00      45.
   300.    20.31        5     1.0     1.0 10000.0     3.00      45.
   400.    22.39        6     1.0     1.0 10000.0     3.00      45.
   500.    25.04        6     1.0     1.0 10000.0     3.00      45.
   600.    27.61        6     1.0     1.0 10000.0     3.00      45.
   700.    30.12        6     1.0     1.0 10000.0     3.00      45.
   800.    31.73        6     1.0     1.0 10000.0     3.00      45.
   900.    32.05        6     1.0     1.0 10000.0     3.00      45.
  1000.    31.63        6     1.0     1.0 10000.0     3.00      45.
ITERATING TO FIND MAXIMUM CONCENTRATION . . .

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND    20. M:
   882.    32.06        6     1.0     1.0 10000.0     3.00      45.

     ***************************************
     *** SUMMARY OF SCREEN MODEL RESULTS ***
     ***************************************

 CALCULATION         MAX CONC     DIST TO    TERRAIN
  PROCEDURE         (UG/M**3)     MAX (M)     HT (M)
--------------     -----------   -------    -------
SIMPLE TERRAIN       32.06          882.         0.
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PEACEFUL VALLEY RANCH - NOX

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
20.	22.47	5	1.0	1.0	10000.0	3.00	45.
100.	25.75	5	1.0	1.0	10000.0	3.00	45.
200.	29.59	5	1.0	1.0	10000.0	3.00	45.
300.	33.17	5	1.0	1.0	10000.0	3.00	45.
400.	36.56	6	1.0	1.0	10000.0	3.00	45.
500.	40.90	6	1.0	1.0	10000.0	3.00	45.
600.	45.10	6	1.0	1.0	10000.0	3.00	45.
700.	49.19	6	1.0	1.0	10000.0	3.00	45.
800.	51.82	6	1.0	1.0	10000.0	3.00	45.
900.	52.34	6	1.0	1.0	10000.0	3.00	45.
1000.	51.66	6	1.0	1.0	10000.0	3.00	45.

ITERATING TO FIND MAXIMUM CONCENTRATION . . .

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 20. M:

882.	52.36	6	1.0	1.0	10000.0	3.00	45.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	52.36	882.	0.

PEACEFUL VALLEY RANCH - SOX

** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
20.	2.121	5	1.0	1.0	10000.0	3.00	45.
100.	2.430	5	1.0	1.0	10000.0	3.00	45.
200.	2.793	5	1.0	1.0	10000.0	3.00	45.
300.	3.131	5	1.0	1.0	10000.0	3.00	45.
400.	3.451	6	1.0	1.0	10000.0	3.00	45.
500.	3.860	6	1.0	1.0	10000.0	3.00	45.
600.	4.256	6	1.0	1.0	10000.0	3.00	45.
700.	4.643	6	1.0	1.0	10000.0	3.00	45.
800.	4.890	6	1.0	1.0	10000.0	3.00	45.
900.	4.940	6	1.0	1.0	10000.0	3.00	45.
1000.	4.875	6	1.0	1.0	10000.0	3.00	45.

ITERATING TO FIND MAXIMUM CONCENTRATION . . .

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 20. M:

882.	4.942	6	1.0	1.0	10000.0	3.00	45.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	4.942	882.	0.

PEACEFUL VALLEY RANCH - PM10

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
20.	1.255	5	1.0	1.0	10000.0	3.00	45.
100.	1.438	5	1.0	1.0	10000.0	3.00	45.
200.	1.653	5	1.0	1.0	10000.0	3.00	45.
300.	1.853	5	1.0	1.0	10000.0	3.00	45.
400.	2.042	6	1.0	1.0	10000.0	3.00	45.
500.	2.285	6	1.0	1.0	10000.0	3.00	45.
600.	2.519	6	1.0	1.0	10000.0	3.00	45.
700.	2.748	6	1.0	1.0	10000.0	3.00	45.
800.	2.894	6	1.0	1.0	10000.0	3.00	45.
900.	2.923	6	1.0	1.0	10000.0	3.00	45.
1000.	2.885	6	1.0	1.0	10000.0	3.00	45.

ITERATING TO FIND MAXIMUM CONCENTRATION . . .

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 20. M:

882.	2.924	6	1.0	1.0	10000.0	3.00	45.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	2.924	882.	0.